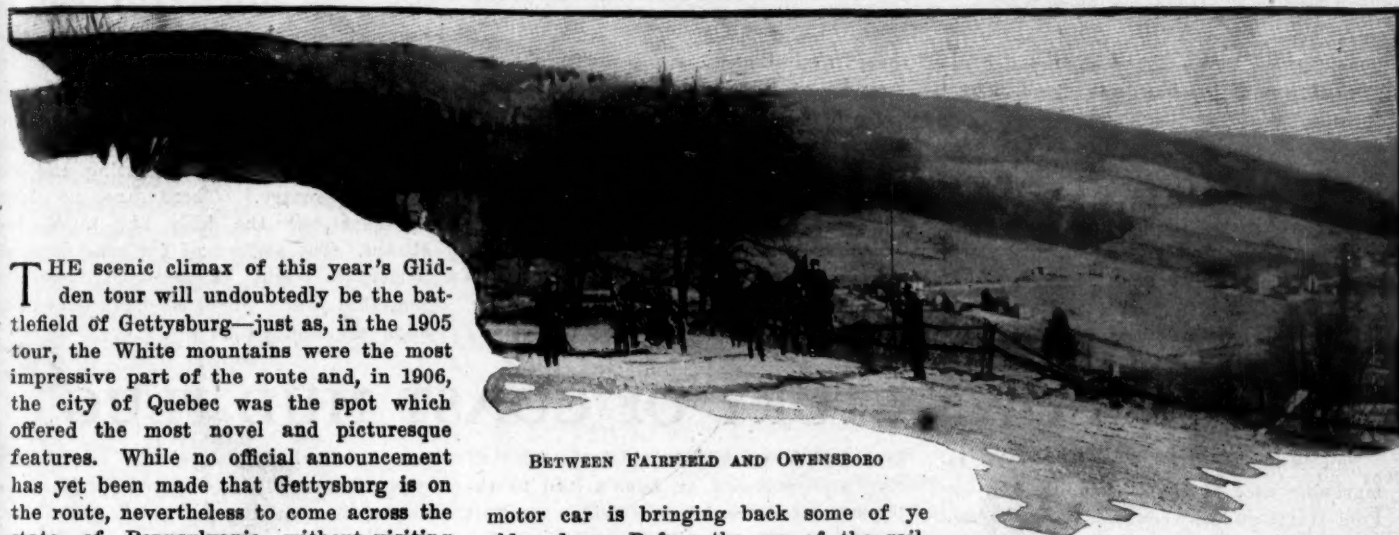


MOTOR AGE

GLIDDEN SCENIC CLIMAX AT GETTYSBURG



BETWEEN FAIRFIELD AND OWENSBORO

THE scenic climax of this year's Glidden tour will undoubtedly be the battlefield of Gettysburg—just as, in the 1905 tour, the White mountains were the most impressive part of the route and, in 1906, the city of Quebec was the spot which offered the most novel and picturesque features. While no official announcement has yet been made that Gettysburg is on the route, nevertheless to come across the state of Pennsylvania without visiting that historic locality would be like presenting the tragedy of Hamlet and leaving out the part of the melancholy Dane.

Passing over, for the moment, the description of Gettysburg, it should be noted that many a beautiful scene will be presented to the eyes of the tourists even before that place is reached. Nature did some of her grandest work in fashioning western Pennsylvania. Leaving Pittsburg and traveling eastward, there are three distinct ranges of the Allegheny mountains to be crossed and the panorama spread before the eyes from the summit of each of these ridges is well worth the many miles of less interesting travel across Indiana and Ohio. Before the days of the railroad, the old pike from Pittsburg to Philadelphia was one of the best in the country, but now it has fallen into a sad state of repair in the mountainous region and it has never been a popular route with tourists. A census of the motorists of Pittsburg would reveal that a surprisingly small percentage have toured east as far as Gettysburg. Among those to make the trip recently was a party of enthusiasts in a White steamer, one of whom did some good work with his camera. To philosophize for a moment, it seems as if the

motor car is bringing back some of ye olden days. Before the era of the railroad, when the principal traffic across the state was on the pike, it was kept in good repair. Now, when good roads have again become of vital interest to many people, there is a project on foot, backed by the motor clubs of the state, to restore the pike to its original condition. Within the next few years the pike will undoubtedly again become an important thoroughfare between Pittsburg and Philadelphia.

Some of the participants in the tour of next July may find that, mixed with the joy of seeing the magnificent scenery of this part of the route, will be the grief of a perfect score marred, for between Pittsburg and Gettysburg will come the elimination. The route between these two places passes through Greensburg, Bedford, McConnellsburg and Chambersburg, and

when the tourists reach Gettysburg they may be assured that they have left behind them the Scylla and Charybdis of the Glidden trophy route.

Ample time undoubtedly will be allowed for seeing the battlefield of Gettysburg. The field was ceded to the United States government by the state of Pennsylvania and has been made a national park. Uncle Sam's first care was to construct a fine network of perfect macadam road, reaching every point of interest. Then the battlefield was put into shape where it would be of the maximum inspiration to the visitor. Every cannon now on the field, we are told, is in the exact spot where it was located during the great 3-day battle. Then the government erected a series of bronze tablets which tell in precise fashion the maneuvers which took place in the several parts of the field. Stone posts have been put in place marking the right flanks and the left flanks of the various divisions. But it is the work of the various states, of the Grand Army posts and of other organizations which has made the battlefield one of the most interesting spots in the country. There are no fewer than 467 monuments on the field, erected by the comrades and the



CONFEDERATE AVENUE, BATTLEFIELD OF GETTYSBURG



VIEW FROM THE SUMMIT OF ROUND TOP MOUNTAIN

posterity of those who fell in the great conflict, one of the bloodiest which history records. Many of the monuments are unusual in that the figures are in attitudes of intense action. Others, like that erected by the Tammany Society of New York are more conventional in design but attract attention because of their size and fine workmanship. The work of adornment, it should be noted, is not complete. Going east from Gettysburg, two distinct

routes to Philadelphia are presented—one by way of Harrisburg and Reading, and the other by way of Lancaster and York. The former is the longer, 150 miles, but it may be deemed advisable to visit Harrisburg, the capital of the state, in order to pay respects to the governor, and incidentally, to see the new \$13,000,000 state house with its \$59,000 worth of thermostats and its \$2,000 bootblack stands. Harrisburg is almost due north of Gettysburg

and is reached by way of York Springs and Dillsburg. From there the route passes through towns of decidedly Dutch origin—Myerstown, Stouchsburg, Womelsdoff to Reading and from there follows the valley of the Schuylkill river through Pottstown and Norristown to Philadelphia.

The shorter route, 120 miles, is by way of York, Lancaster and Coatesville, entering Philadelphia by way of the handsome suburban towns of Rosemont, Bryn Mawr and Ardmore. An interesting feature of this route is the bridge across the Susquehanna river from Wrightsville to Columbia. This bridge is over a mile long and is primarily for railroad tracks. There is not room for a car at either side of the tracks so before crossing one must get the signal of "clear track" from the toll gate keeper. The toll to use this bridge is, by the way, 40 cents per machine.

The country east of Gettysburg on either of the above routes is very unlike that in the western part of the state. As one travels westward, the mountainous country gives place to an undulating and less rugged country. There are no level stretches but the hills are much less abrupt. The surface of the road is much better as might be expected from the fact that people are much more dependent upon the highways.

OWEN'S OWN STORY OF COAST MUD PLUG

San Francisco, Cal., April 4—The remarkable race of the Oldsmobile and the Pope-Hartford between Los Angeles and this city has been run, and the honors lie with the Oldsmobile. Despite the fact California was but just emerging from one of the greatest storms in its history, E. P. Brinegar, challenger for the Olds, insisted there be no postponement. Few believed it would be possible for either car to make the trip, but Ralph Owen came through. The distance of approximately 550 miles was covered in 46 hours and 50 minutes. During that time Owen never left the wheel while the car was in motion, which probably establishes a new record for an unbroken stretch of driving. Enthusiasts out here are of the opinion that the race was the most strenuous piece of motoring ever undertaken in the history of the sport, at least in this country. It is called a race by courtesy, but in point of fact it was an endurance contest of the most rigorous kind.

The race was undertaken right at the conclusion of a storm that was almost without precedent for severity. All winter it had rained in the most persistent manner, and in March all the flood gates of heaven seemed to be opened to let loose the moisture that remained. According to the weather man, it was the wettest March in 57 years. When the rain stopped, the traffic of the state was completely tied up.

The cars started from Los Angeles on the morning of March 28. Owen won the

toss, and he elected to start the Olds off last, allowing half an hour's lead to the Pope-Hartford, which was driven by Bert Dingley of Vanderbilt race fame. The Pope-Hartford was overtaken about 40 miles out of Los Angeles, where it got stuck in a river. It finally got out of this, and all went comparatively well until misfortune came again in the Tejon pass, about 48 miles south of Bakersfield, some 250 miles north of Los Angeles. Here a water-soaked road gave way under the weight of the car, and machine and drivers were precipitated into the ditch below. One of the axles was damaged,

and a wheel was smashed. The drivers were unhurt. This put the Pope-Hartford out of the running for good, and one of the weary men footed it almost the entire distance into Bakersfield to wire to Los Angeles for new parts.

The story of the better luck and success of the Oldsmobile is well told by Owen himself, who prepared especially for Motor Age the following story of his trip:

"At 3 o'clock on the morning of March 28 I was awakened by a tremendous tooting of horns and hammering on my door and, inquiring what the trouble was, I was informed it was time to get up and bring the Mud Lark up to the firing line.

"Our side won the choice and we took last place, starting 30 minutes after our rivals. It was necessary to make a detour from the main road right in the city of Los Angeles in order to get out on roads which were passable leading to the Newhall grade, which we reached without mishap 1 hour and 10 minutes later. We could see where our rivals had been making pretty good time, at least on the corners, as was told to the experienced eyes of the crew of the Mud Lark on account of their wide skids.

"Nothing of consequence happened until we were some distance in the San Francisquito canyon. Meeting a man in a buggy, we asked him how long since he had seen a motor pass, and he informed us we need go but a short distance until we would see for ourselves. In fact, we did, and if you ever saw men and horses



AN ACTION MONUMENT

working hard, there it was. Our rival was in the water, and in deep, the current being so swift it rushed entirely over the tonneau and into everything. Our crew did a little prospecting and found a likely place to cross about 100 feet higher up, and after considerable hard work with our block and tackle, we managed to get our car across.

"We proceeded up the canyon a couple of miles, when we encountered another bad ford. We got our front wheels through and upon high ground all right, but the rear wheels sank deeply into the sand and the car refused to go further without assistance. While we were jacking up the rear wheels, putting rocks, etc., under them, we heard a great commotion lower down in the canyon, and, upon turning around, we saw our rivals coming up behind four mules, with Bert Dingley at the wheel and Wild Bill Ruess sitting beside him with a big long whip in one hand and the lines in the other, driving like mad.

"Before crossing the creek, they got out to investigate, as we had previously done, in order to find a better crossing than we had endeavored to take. The Pope-Hartfordites were cautioned by one of their party to give the Oldsmobile plenty of room, as we had not in any way crowded or hampered them in getting through. They succeeded in crossing, with the aid of their mules, in fine shape, and as soon as they were on high ground, they stopped long enough to inquire if we had plenty of grub and insisted upon leaving part of their supply with us, which they did.

"We were some 30 minutes getting through, and about an hour later we sighted our rivals going up the canyon. We both crossed and re-crossed the stream a great many times, and, after a very dangerous ford, our rivals slowed up and stopped on a long steep grade, but not, however, until they had given us plenty of room to get by. As we went by we were wished good luck by the entire crew. We are extremely sorry to say this was the last time we had the pleasure of seeing them during the race.

"We proceeded up the canyon until we came to a very bad sand-wash, and instead of getting out and building a road through this, which we could have done, we hitched a pair of mules to the front end and pulled the car through. We, however, were towed only 20 feet, but it was 20 feet of awfully bad going we found. At Elizabeth lake we encountered another sand-wash, and as there were no mules or horses handy, it was necessary to build a road, which we did.

"Nothing of importance happened until we were going down the Tejon pass, when the road which we had taken on our previous trip was blocked and a new road leading off almost at right angles was found. This road had been diverted by an enterprising saloon keeper, so as to bring the traffic up to the door of the place. We were met at Rose Station, some



IN PENNSYLVANIA MOUNTAINS

20 miles further on, by a guide who showed us the way into Bakersfield, where we were met by an enthusiastic throng of people. We were obliged to go very slowly on account of the enormous crowd. We were here given our first warm lunch, which consisted of hot coffee and sandwiches. Everything was done by the citizens to expedite our getting away, and after about a 20-minute stop, we headed for Fresno over some very fine roads.

"Everything went fine until we came to Cross creek, which was over its banks in several places, our guide informing us the water was not deep and that the roadway was solid. We plunged in, but came to a sudden stop about 40 yards in, with the water running through above the floor of the car and the batteries drowned out. It required the efforts of the entire crew, together with the block and tackle, to get out, and all this consumed a couple of hours' time. We finally reached Fresno about 1 o'clock.

"The very worst roads we encountered on the entire trip were about 4 miles on

each side of Merced. Here we found mules waiting, but, upon investigation, we found they had been hired by and were waiting for our rivals, so we plunged into this adobe, hub deep, and our struggle through this was witnessed by a great many spectators who came out from the village to enjoy the spectacle. Mr. Brinegar had succeeded in hiring three ponies in case we should need them, and upon dropping into one of the sink-holes in the middle of the road, we decided not to strain our car any more than was necessary and hitched a pair of these diminutive horses on in front. They gave us a lift for about 100 feet, and as it was impossible for them to keep out of our way, we had them removed and went the remainder of the distance under our own power. We wish here to state that we resorted to the use of animal power but twice.

"We crossed the San Joaquin river on a barge hired for this purpose, as the water was from 5 to 15 feet deep at the approaches to all the bridges, making it absolutely impossible for traffic of any kind to use them. We were here met with several surprises, as we found the sheriff, with his hands full of papers, waiting to serve an injunction upon some one, but in the excitement of the moment we ran aboard, cast off the lines, and soon were in midstream out of his jurisdiction.

"We were met on the opposite side of the river by a more enthusiastic crowd, which lent us every assistance in getting ashore. Here Mr. Young introduced us to Dr. West, who was to pilot us into Tracy, thence to Oakland, our destination, where we arrived at 3:50 A. M. without further adventure, excepting that we passed through 8 miles of extremely bad adobe and crossed over Patterson's pass, where we had about the same number of miles of very steep climbing. The trip of 550 miles was made by one crew and one driver without replacing a single part on the car, also without tire trouble."



OLDSMOBILE AT FINISH OF MUD PLUG AT 3:50 IN THE MORNING

MAYOR OPENS PITTSBURG'S FIRST SHOW



DUQUESNE GARDEN, WHERE PITTSBURG SHOW IS BEING HELD

PITTSBURG, PA., April 8—Promptly at 8 o'clock tonight Mayor George W. Guthrie pressed the electric button which started the first motor show ever held in this city. It is seldom Duquesne garden holds a more representative body of people than gathered to witness the formal exhibit of \$400,000 worth of motor cars, including everything from the stripped chassis to the highly-polished \$5,000 car with its elegant limousine body. Millions were represented in the opening crowd, which showed very keen enthusiasm for motoring by its hearty appreciation of the first show Pittsburgh ever attempted. Besides Mayor Guthrie a dozen or more prominent city officials were present.

The show is a telling reminder of what Pittsburgh has attained in motor development in the last 8 years. In 1899 D. M. Seeley established the Seeley Mfg. Co. in this city, and Banker Brothers, who had been pioneers in the bicycle business for years, began to sell motor cars about the same time. W. N. Murray soon joined forces with Mr. Seeley and after the latter's retirement established the Standard Automobile Co., which for years has been one of the leading Pittsburgh agencies. Since that time, especially during the last 3 years, the sales of motor cars have increased with wonderful rapidity and at present the investment aggregates fully \$3,000,000. Of this amount about \$1,500,000 was spent last year for purchasing nearly 800 high-class machines. The number of new agencies represented at the show this week affords still further evidence of the tremendous gain in popularity which the motor car is making in the steel city, where for years it was thought to be only a venture at best, because of the narrow streets and steep grades.

Duquesne Garden has been made over into a beautifully decorated motor palace for this occasion. The prevailing color scheme is green and gold and the spacious hall is trimmed with decorations that cost upward of \$4,000. Big flags hang from the ceiling and drape the rails around the boxes. In the front of the garden is an immense electric circle, one of the real beauties of the show, inscribed with the words "Automobile Dealers' Association, Pittsburgh." The big stage at the farther end of the hall is a mass of palms and ferns and forms a beautiful setting for the long lines of motors that are faced on both sides of the two broad aisles. The boxes around the spacious area where the motors are shown are beautifully decorated, and behind them are the booths for the exhibit of accessories. The electric display is one of the most brilliant that has been given in Duquesne garden, over 10,000 lights making the place lighter than day, and with the different colors give a most harmonious effect to the whole.

The show which will close Saturday evening is being held under the auspices of the Automobile Dealers' Association of Pittsburgh, which comprises sixteen leading concerns of this city. William N. Murray, president of the association, was the originator of the show idea and from the first has had his shoulder to the wheel constantly. The show committee is composed of W. H. LaFountain, of the Atlas Automobile Co.; Thomas I. Cochran, of the Keystone Automobile Co., and Earl Kiser, who is managing the affairs of the Winton Motor Carriage Co. in Pittsburgh. The committee was greatly hampered in its work by the fact that the dog show did not vacate Duquesne garden until Sunday morning, making it almost a herculean task to prepare and arrange the motor

exhibits in time for the formal opening of the big exhibition this evening.

The car exhibits proper on the main floor of the garden include more than a score of the agencies which have gained lasting popularity in Pittsburgh. Their friends were there by the dozen tonight to congratulate the agents on the new beauties of their cars. It is confidently expected by dealers that the show will be of great benefit to them inasmuch as it is bringing together all the motorists of western Pennsylvania, West Virginia and eastern Ohio, something that has never been attempted before. Only one Pittsburgh manufacturing company is represented in the exhibit. The following official list of models on exhibition was issued today by the management of the show: Banker Brothers Co., one Pierce Great Arrow 45-horsepower chassis, one Pierce Great Arrow 30-horsepower touring car, one Pierce Great Arrow 45-horsepower touring car, one Stevens-Duryea chassis, one Stevens-Duryea touring car, one Stevens-Duryea Big Six touring car, one Cadillac chassis, one Cadillac 20-horsepower touring car, one Autocar runabout, one limousine body; Rainier Automobile Co., Rainier runabout, Rainier 35-horsepower touring car, Rainier 35-horsepower limousine car; Central Automobile Co., Baby Reo, Reo runabout, Reo touring car, Grout touring car; East Liberty Automobile Co., model C Jackson touring car, model D Jackson touring car; Winton Motor Carriage Co., model M chassis, model M touring car, model M

FULL LIST OF THE EXHIBITORS

MOTOR CAR EXHIBITORS

Allegheny Automobile Co.—Glide, Austin, Rapid truck
American Automobile Co.—Pope-Toledo, Pope-Hartford, Pope-Tribune, Pope-Waverly electric
Atlas Automobile Co.—Premier, Chadwick, Maxwell
Auto Repair Co.—Haynes, Corbin
Banker Bros. Co.—Pierce Great Arrow, Stevens-Duryea, Cadillac, Autocar
Colonial Automobile Co.—Cleveland, Aero-car, Cartecar, Brazier, Baker electric
D. P. Collins & Co.—Columbia, Columbia electric
Central Automobile Co.—Reo, Grout
East Liberty Automobile Co.—Jackson
Fort Pitt Automobile Co.—Locomobile, Oldsmobile, Stearns
Hiland Automobile Co.—Peerless, Thomas, Buick, Thomas Forty
Homewood Automobile Co.—Frayser-Miller
Iams Motor Co.—Royal Tourist
Keystone Automobile Co.—Welch, Stoddard-Dayton, Ford, White steamer, Columbus electric
Liberty Automobile Co.—National, Wayne, Mitchell, Mora
E. D. Nevin—Darracq
James E. McNary Co.—Studebaker, Studebaker electric
Pennsylvania Automobile Co.—Marmon, Crawford
Pittsburgh Motor Vehicle Co.—Electric
Rainier Automobile Co.—Rainier
Standard Automobile Co.—Packard, Franklin
Union Automobile Co.—Simplex
J. G. Warwick & Co.—Jewel
Wilkinsburg Automobile Co.—Elmore
Winton Motor Carriage Co.—Winton
M. H. Page—Mercedes
Pittsburgh Motor Vehicle Co.—Pittsburgh electric truck, Babcock

limousine car, model M runabout, model XIV chassis, model XIV touring car; Standard Automobile Co., Packard 30 chassis, Packard 30 touring car, Packard 30 runabout, model D chassis Franklin, model G Franklin touring car; Liberty Automobile Co., Mitchell model, E runabout, Mitchell 30-horsepower touring car, Mitchell 35-horsepower touring car, Mora roadster, Mora tourer, Mora chassis, National 50-horsepower chassis, National model H 50-horsepower touring car, model N Wayne chassis, model N Wayne touring car, model N Wayne runabout, model N Wayne touring car; American Automobile Co., Pope-Toledo chassis, Pope-Toledo touring car, Pope-Waverley electric, Pope-Hartford runabout, Pope-Tribune runabout; Allegheny Automobile Co., Austin touring car, Glide touring car, Rapid truck; J. G. Warwick Co., model D Jewel runabout, model E Jewel stanhope; Atlas Automobile Co., Premier touring car chassis, Premier touring car, water-cooled, Premier air-cooled touring car, model R. S. Maxwell chassis, model R. H. Maxwell chassis, three Maxwell cars, models R. L., R. S. and R. H., Chadwick touring car; Colonial Automobile Co., Cleveland touring car, Cleveland touring car chassis, Cleveland runabout, Aerocar model F touring car, Aerocar chassis, model E Cartercar, model E Cartercar chassis, Baker electric; Fort Pitt Automobile Co., Stearns chassis, Stearns touring car, Stearns limousine, Oldsmobile touring car, Oldsmobile runabout, Locomobile limousine, Locomobile racer, Vanderbilt cup car; Homewood Automobile Co., 24-horsepower Frayer-Miller touring car, 50-horsepower Frayer-



INTERIOR VIEW PITTSBURG EXHIBITION HALL, SHOWING DECORATIONS

Miller chassis; Iams Motor Co., Royal tourist touring car, Royal tourist chassis, Royal tourist runabout; Hiland Automobile Co., Peerless touring car, Peerless roadster, No. 16 Peerless chassis, Thomas Flyer chassis, Thomas Flyer 60-horsepower touring car, Buick model F chassis, model F Buick touring car, model G Buick runabout, model D Buick touring car, Thomas Forty chassis, Thomas Forty roadster; Auto Repair Co., 24-horsepower model H Corwin air-cooled car, model G Haynes touring car, model F 30-horsepower car; Keystone Automobile Co., model G White runabout, model G White Pullman touring car, model H White touring car, model G Welch touring car, model F Stoddard-Dayton chassis, model F Stoddard-Dayton touring car, model F Stoddard-Dayton runabout, Columbus electric, Ford runabout; Pennsylvania Automobile Co., model C Marmon touring car, model F Marmon touring car, model F Marmon chassis; E. D. Nevin, 32-horsepower Darraq touring car, 20-32 horsepower Darraq limousine car, 50-60 Darraq six-cylinder chassis; James E. McNary & Co., Studebaker touring car chassis, Studebaker electric stanhope, Studebaker electric victoria phaeton, electric delivery truck; Wilkinsburg Automobile Co., model 18 Elmore chassis, model 16 Elmore touring car, model 17 Elmore runabout, working model of Elmore engines; D. P. Collins & Co., model 48 Columbia chassis, model 48 Columbia touring car, Columbia electric; McKeesport Auto and Machine Co., Holman runabout; Pittsburgh Motor Vehicle Co., Babcock electric, Pittsburgh electric truck; B. F. Benson, 70-horsepower American Mercedes touring car, 45-horsepower American Mercedes chassis, 70-horsepower American Mercedes runabout; M. H. Page, of Mercedes Import Co., Mercedes touring

car, Mercedes limousine and one chassis.

The exhibits of accessories were no less striking than the show of cars. One of the most noticeable of these was the two motor boats shown by the Oakmont Motor Boat Co. One of them is a 25-foot semi-speeder, and the other is an 18-foot compromise boat. Great interest was taken in the exhibit in view of the motor boat races which are now being arranged for at an early date.

Practically everything that a motorist ever needs was shown in the forty or more booths overlooking the boxes and facing on the broad aisle leading around the garden. Although Pittsburgh manufacturing concerns were noticeably absent in the display of cars, fully one-third of the exhibits of accessories was from local concerns. The Pittsburgh merchants took an extensive part in making the show a success. McCreery & Co. had a splendid exhibit of motor clothing that was one of the features of the accessories.

In front of the garden the Westinghouse Airbrake Co. had two large booths devoted to its exhibit and near by was the Vestal Shock Absorber Co. booth. The Pittsburgh Automatic Vise and Tool Co. was well represented, as was the Pittsburgh Automobile Tire Repair Co.

The show committee provided for the week one of the best orchestras in Pittsburgh instead of the customary brass band. A fine musical program was rendered to-night and will be continued throughout the week. A special program will be rendered Wednesday and Saturday afternoons.

The profits from the show will be turned over to the Automobile Dealers' Association as the basis of a fund to be used for further promoting the motor interests of Greater Pittsburgh and will not be divided pro rata among the dealers exhibiting.

AT PITTSBURG'S MOTOR SHOW

ACCESSORY EXHIBITORS

T. C. & W. L. Fry Co.—Spark plugs
Dr. O. Kuehn—Optical goods
William Hjorth & Co.—Wrenches
Wallace M. Reid & Co.—Insurance
F. H. Kelsey—Spark plugs
Graham & Goodman—Shock absorbers
A. E. Kent—Insurance
James L. Gibney & Brother
Times Square Automobile Co.—Second-hands
Standard Automobile Co.
W. H. La Fountain
Robbins Electric Co.
United States Graphite Co.
Westinghouse Air Brake Co.—Pumps
J. J. Griffith
Vestal Shock Absorber Co.—Shock absorbers
Earl Kiser—Tanks
Auto Jack Co.—Jacks
W. C. Robinson & Sons Co.—Oils
Auto Tire & Repair Station—Tires and accessories
Pittsburg Automatic Vise and Tool Co.—Vises and tools
Atlantic Refining Co.—Oils
W. W. Gallery & Co.—Polish
Julius King Optical Co.—Optical goods
Charles E. Morris—Wrenches
Aetna Insurance Co.—Insurance
F. A. Gophet
H. R. Hargis—Speedometers
H. S. Campbell
Strung Soap Co.—Cleaning material
McCreery & Co.—Motor clothing
Pittsburg Auto Tire Repair Co.—Tires
E. J. Thompson Co.—Bodies
Keystone Automobile Co.
Pittsburg Motor Vehicle Co.—Electric cars
Excelsior Fire Appliance Co.—Extinguishers
Waverly Oil Co.—Oils
L. H. Broome
Oakmont Motor Boat Co.—Truscott boats



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MOTOR AGE



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SHOWING HEALTHY GROWTH



JUST as some particular improvement in a particular car interests every owner of that make, so anything pertaining to the advancement of Motor Age will be of interest to not only its advertising patrons but its readers as well—at least Motor Age believes this to be the case. If the growth of the subscription list is as gratifying to the readers and the trade as it is to Motor Age, then, indeed, those who are interested are in a happy frame of mind. While the results of the past several years of effort to build up a mighty list of satisfied readers have been such as to bring contentment, they have not been such as to satisfy, for when one is satisfied then comes an end to ambition, and that point has not been reached by Motor Age. The subscription department of Motor Age is an extensive affair, with as complete a system as can be inaugurated, and its efforts are always directed toward expansion, as results show. Up to the time of going to press with this issue the number of paid up annual subscriptions received since January 1 of this year more than equals the number received from January 1 to July 31 of last year. In other words, as many subscribers were added to the list in 3½ months of 1907 as in 7 months of 1906, which, if the increase is maintained, will mean one of 100 per cent, while the increase in the total subscription list amounts to something over 45 per cent. This increase has been brought about by untiring effort on the part of the subscription department, supported by an issue each week that has kept Motor Age at the top of motor car publications.

NOTHING BUT JEALOUSY



AMERICANS are not wanted in France as long as there is the least chance of taking away French trade; if the Americans are tourists alone and are willing to part with their money, they are doubly welcomed. But the American gold cup tourists are not wanted and will not be welcomed by the French motorists, for the Automobile Club of France has refused to sanction the tour, on the grounds that, it not being an international affair, it cannot recognize it in any form. It will be admitted that the French club is strong and that with its sanction and support certain things might all the more easily be arranged than they could without the French club's sanction, but the tour can go on, nevertheless. The management of the tour by asking sanction and being re-

fused has placed the French club in a most unenviable light and if harm comes to the business of the French makers in this country blame for it can be laid at the door of the French motoring body. Nothing but jealousy can be attributed to the French club for the decidedly selfish stand it has taken; the least that can be said is that considering the support America has given the French motor car industry it is the most short-sighted policy that the French club could devise.

GLIDDEN BREAKERS AHEAD



UNLESS all signs fail the committee having charge of the annual tour of the American Automobile Association for the Glidden trophy will have as much criticism heaped upon its shoulders as did the committee of a year ago, and the contest is a long way from being under way. Whatever criticism may appear will be over the rules, which are being picked to pieces as fast as their meaning can be comprehended by the motoring public. It is true it would be impossible for any man or any set of men, no matter how wise, how experienced or how honest and sincere, to frame a set of rules that would please even a majority, much less all, but it would seem reasonable to suppose that rules might be made to cause a minimum of objections. Motor Age gave its reasons last week why the last clause in the rules should be modified, and it is of the opinion that the committee would be acting with wisdom were it to reconsider this particular rule. Another point has been raised that may cause more or less trouble before the end of the tour—that permitting entrants naming the clubs under whose colors they desire to drive. This is by no means a fair proposition to the clubs, inasmuch as a little trade jealousy may be responsible for a club faring badly in the outcome if the trade jealousy shall

prove stronger than loyalty to the club. The drivers of different makes of cars on the same club team could make things so disagreeable for one another as to throw their club entirely out of the cup contest; or, because of trade interests, they might injure their own club's chances for the sake of aiding a driver of a like make of car; or they might deliberately injure their own chances of success for the sake of the injury that might be inflicted upon a trade rival. Motor Age hopes there are none such poor sportsmen who will take part in the contest, but as long as there is such flexibility of rules there is always a chance for injustice to crop out. As the rules now stand the committee in charge of the event will find its path anything but rosy, the clubs are apt to suffer and there are numerous chances for all sorts of disagreeable things to happen to mar what might otherwise be the biggest and most successful tour ever promoted.

A NATIONAL ORPHANS' DAY



SOONER or later the motor car will receive the blessings of the world for all the good it has then done and all the good it is then doing—it will be appreciated to the full and there will be no such thing as motorphobia. Probably the turning point was reached when some fertile and far-seeing mind suggested that the New York orphans be taken for a ride in motor cars and an outing by the side of the roaring waves. No sooner had New York tried the scheme than motorists in other places began to gather in the little unfortunates and to exhibit a spirit of generosity, and so the orphans' day scheme spread until almost every place of prominence in the country had received its share of praise from the press and the public—and immediately the edge of motorphobia began to dull. Now the American Automobile Association has taken up the work and has declared that a certain day in June shall be known as orphans' day and that all motorists in all places ought to place themselves and their cars at the disposal of the youngsters who are unfortunate enough to be without the blessings of the homes that most children have. The movement ought to receive the endorsement of all motorists, all motoring organizations, all public officials, the press and the public—it certainly will have the children's. Orphans' day may come to mean as much in a way as does Memorial day—certainly it should be as kindly regarded and as generously supported. Such things are certain to prove foes to motorphobes and motorphobia.

REMOVAL NOTICE

On and after April 17 Motor Age will be established in its new and commodious offices at the southwest corner of Michigan avenue and Twelfth street, Chicago, or No. 1200 Michigan avenue, to which all mail should be addressed thereafter. Motor Age will be pleased to see its friends in its new home any time after May 1, when its offices will have been arranged and settled.



CURRENT COMMENT



WHEN John Wetmore is at home he is the correspondent for Motor Age in the metropolis; when there is anything big going on in motordom he is the envoy extraordinary and minister plenipotentiary of Motor Age and does big stunts and writes great things. He takes care of the annual Florida beach tournament and has a good time while others are working—that's his habit. But he gets there and sends good stories for the readers of Motor Age. On his southern trip this year he went in a motor boat from Miami to the Bahamas and says he saw a whale on the way over. Consequently he wrote a thrilling story about the whale—which got away. The other day a dead whale rolled up on the Bahama shore and Wetmore claims the whale. But while he has proved a corpus delicti, he hasn't proved the right one, and so his story is still in doubt.

INSURANCE companies have found out that motorists are entitled to some of the justice that is dealt out to ordinary mortals, as a recent decision in New York proves. A machine that had been insured in one of the companies took fire after an accident because of a broken gasoline pipe, but the insurance company raised a very minute and technical point in order to avoid paying the owner the money to which he was justly entitled. As it was, however, the court sustained the contention of the owner and the insurance company had the pleasure of having judgment



AN EPISODE ON THE CALIFORNIA MUD PLUG

entered against it. Until there have been a number of such decisions similar cares will keep bobbing up.

PITTSBURG with its local show winds up a season that has had a surfeit of motor car exhibitions; but while the trade has become heartily sick of the exhibitions it realizes the fact that they have been the means of spreading the gospel of the motor car and the delights of motoring and of course is happy over the result, notwithstanding the hard work that was necessary to bring them to successful ends. Another year will call for a number of changes in show matters, particularly those relating to local affairs, but what these changes may be cannot be foretold.

LITTLE by little the objections to the rules prepared for the government of the contest for the Glidden trophy are cropping up and before long the rules will have been so picked to pieces that Mr. Hower and the other members of the committee will have difficulty in remembering just why any rule was ever proposed.

BECAUSE Mr. Glidden made a trip in a motor car on a railroad is no sign the scheme is to become popular after it has been tried thoroughly, but a Kansas City club has in mind trying it on as a club tour. Prediction is made that it will not pan out so well as is at present expected, for there is none of the attraction that appeals to the road tourist. What will happen if the second or third car suffers a breakdown, and stalls the thirty or more cars back of it and a limited train happens along? Notwithstanding the fact that the motor cars will be running on a schedule prepared by the railroad company, there will be a mighty scramble to get the motor cars off the track and a lot of hard work about the matter.

BOTH the extreme east and the extreme west have been deeply interested in severe tests made with motor cars, one a sealed bonnet test and another a trip from Los Angeles to San Francisco after one of the worst storms California ever saw. The former test was one of consistency and proved all that was undertaken; the latter was one of reliability and proved even more than had been bargained for by those interested. When a car can go from Los Angeles to San Francisco, 500 miles, over such roads as were encountered on this trip, it ought to satisfy any man that, while the horse is a good and noble brute and has many good qualities, it stands little show with the modern motor car.

THE WEEK IN BRIEF

Ralph Owen tells of adventures he encountered in his race with Bert Dingley from Los Angeles to San Francisco; contest over roads that defy description.

Glidden rules as announced by A. A. A. do not entirely satisfy N. A. A. M., which would like to see runabouts admitted to competition.

S. F. Edge's six-cylinder Napier wins English flexibility test in which a Ford and a Reo compete and make creditable showing.

Missouri legislature passes measures which mean a magnificent good roads system for the show me state in the future.

W. Gould Brokaw enjoined from importing or using foreign cars without payment of Selden license.

Beauties of Gettysburg, which may be on Glidden tour route, are described and illustrated.

Sidney S. Breese drives Westinghouse car with sealed bonnet 408 miles on Long Island.

Chinese government grants permission for Pekin-Paris race to run through empire.

Jarrott in Crossley car cuts London-Monte Carlo record nearly 10 hours.

Germany adopts new system of numbering and identifying motor cars.

F. B. Stearns offers to put team of Stearns cars in Glidden tour.

A. L. A. M. reports that show receipts for 1906 were \$70,226.82.

COMING MOTOR EVENTS

April 11, 12, 13—Denver show, G. A. Wahlgren, manager.

April 18-20—Targa Florio, in Sicily.

April 25-28—Touring competition, under auspices of the Automobile Club of Turin.

April 28—Chauteau Thierry hill-climb.

May 1-15—Paris-Madrid touring competition to Madrid exhibition.

May 15-31—Automobile Club of the North, industrial vehicle competition.

May 18-21—Milan touring competition.

May 18-21—Auto-Cycle Club of France, Paris-Ostend-Paris.

May 24-27—Automobile Club of Austria, voiturette contest.

May 31—Automobile Club of Auvergne, Rochet-Schneider cup race over Auvergne circuit.

June 3-12—Herkomer cup tour in Germany.

June 14—German emperor's cup touring car race in Germany.

July 15-18—Ostend week.

August 2-13—Auvergne club meeting.

August 18-22—Ardennes circuit and coupe de Liedekerke.

September 1—Florio cup race, over Brescia circuit, Italy.

September 14-15—Mont Ventoux hill-climb, France.

September 15—Semmering hill-climb, Germany.

RULES DO NOT SUIT N. A. A. M.

Makers Would Have High-Powered Roadsters Admitted Into Competition for Glidden Trophy—Demand Made for Permission To Ship Extra Parts Ahead

New York, April 8—It now transpires that the N. A. A. M. is officially far from satisfied with all the provisions of the A. A. A. annual tour rules despite the fact that they were formulated and adopted following a conference between committees of the two bodies and that it was permitted to be announced that the N. A. A. M. trio of conferees had pronounced them satisfactory.

It now turns out that there was after all something doing of importance at last week's meeting of the N. A. A. M. executive committee, though no statement was given out at the conclusion of the meeting or has been to date.

The preamble of the formal resolutions adopted set forth that the N. A. A. M. was opposed to a competitive tour and in favor of a pleasure jaunt and that the competition under the rules adopted would be more severe in character than desirable and at the same time not conducive to the conduct either of a pleasure tour or a practical and useful test. The resolutions, which followed, asked the American Automobile Association to admit of the participation of runabouts, the elimination of the requirement that competitors should carry aboard their cars all parts that were to be used for replacements, and the restriction of the daily controls to two.

Motor Age's correspondent is able to state that one or more touring board leaders are firm in the contention that such a pitting of two against four-passenger vehicles would be unjust and unfair and further that the Glidden tour test has in mind the trying out of touring cars solely. Recognizing the desirability of giving a chance of official demonstration to a large and growing class of cars these leaders have in mind the solution of the problem by offering a special cup for high-powered runabouts. By so doing the touring board would establish, of course, an individual competition, against which the N. A. A. M. has frankly and emphatically declared from the start of the tour rules discussion. A readjustment of the allotment of points so that there might be some sort of an equalization in scoring as between the two classes of vehicles might solve the problem, it has been asserted.

The demand that there be a return to the former much-criticized system of permitting parts to be sent ahead for replacement purposes, even though modified by a penalization for their use, has without question its foundation in the disinclination on the part of some makers, evidently in a majority at the executive committee meeting in question, to have an official register made of parts deemed necessary to be carried for emergency through danger of

the public misconstruing a provision for an emergency into a confession of fear of weakness.

Though touring board officials declare that no more than a noon and a night control are in contemplation, the N. A. A. M. demand is in line with Motor Age's editorial contribution that the rules should be settled beforehand and admit of no eleventh-hour or a route amendment. It is also declared by them that though not so stated in the rules, a car that is withdrawn or disqualified is to bring a loss to its team of the proportionate number of the points allotted to the team. There also is a frank admission that the scheme of allotment gives an advantage to the larger teams, which was contemplated in making the schedule to stimulate entries by clubs.

MAY RECONSIDER RULES

New York, April 10—Special telegram—Chairman Hower of the touring board, before his departure for Buffalo yesterday, is quoted as saying there would be no radical changes made in the rules. "About fifteen cars are already entered for the competition," said Mr. Hower, "and I fully expect to see a hundred cars on the trip. By this I mean regular stock touring cars. This does not look as though the objections were very strong, or that the success of the tour is seriously threatened. It is, however, possible some modifications will be made, chiefly in the addition of a class for high-powered runabouts. It was impossible to arrange the rules so runabouts and touring cars might compete on equal terms. The committee will meet this month, and if the executive board of the American Automobile Association deems the runabouts feature feasible, a special cup will probably be offered."

Manager Reeves said today the A. M. C. M. A. would support the tour whatever rules the A. A. A. might make. In a letter to the writer George W. Bennett, who, with Windsor T. White, was a member of the N. A. A. M. committee while in the preliminary conference with the A. A. A. touring board representatives as to the rules, says: "In part it is no surprise to the A. A. A. touring board, as both Mr. White and myself have written both Judge Hotchkiss and Mr. Hower on the change made by their touring board on the rules as adopted and approved by the conference committee of N. A. A. M. and the A. A. A. As the rules were approved by that conference they were perfectly satisfactory to the manufacturers, and had the A. A. A. touring board presented them to its executive committee in that shape there would have been no controversy. They did not, however, and several im-

portant changes were made without consultation with the manufacturers.

"There are just a few things you want to remember in connection with this Glidden tour. If you will look at the original deed of gift and the conditions attached thereto, you will find there were no limitations as to the type of vehicle eligible to compete. The rules for the second year were amended by the A. A. A. making touring cars carrying four persons or their equivalent in weight only eligible. This was natural, just and advisable, for the reason that at the first tour practically nothing but runabouts were being used, while all the time of the second tour touring cars were in vogue. At this date the runabouts only of high power are again in vogue and by the same token that permitted the A. A. A. committee to revise the rules to meet the conditions existing in 1906 it has the same right to amend them in 1907 to meet the conditions existing now. Further than this, Mr. Hower stated to the conference committee, of which I was one, that Mr. Glidden had given the A. A. A. permission to amend the conditions of the deed of gift in any manner it saw fit to meet existing conditions. So far as I know there is no intention of makers entering cars as makers, but it has been and is the express intention of the members of the N. A. A. M. to induce the clubs in their vicinity to enter teams. The makers want to be left out of it and promote individual touring and club tours, whereby owners will become interested in the cars, in touring and in good roads.

"The rules as adopted are good for neither man nor beast. They strive simply to hamper the individual and are not strong enough to control the manufacturers were the latter to enter. There is no desire on the part of the manufacturer to have the tour pose as a test and I believe I am right in saying no maker of a reputable vehicle of today would have any misgivings about any of his cars entered in such a tour as this. The clause we wished inserted by which parts could be replaced en route that were not carried on the cars was intended to cover emergencies, such as collisions, accidents, etc., but the use of such parts to be penalized in proportion to their list price."

MASSACHUSETTS OBJECTS

Boston, Mass., April 8—Some of the Boston motorists who have been on tours seem to think that \$100 is too much for an entry fee for the Glidden tour. They say it will keep the individual out of it and make it a run for the manufacturers. With the club basis as the final award that also will tend to keep the individual entries down. There is small likelihood of many eastern clubs being represented. There is grave doubt that the Bay State A. A. or the Massachusetts A. A. will enter cars for the trophy and certainly no other clubs east of New York have as many members as these two. Un-

doubtedly the Maine, Rhode Island or Connecticut clubs will not be represented. There might be a combination formed and have three New Englanders go representing one of the clubs in that section. The eliminating of the runabouts from the contest is not pleasing in view of the fact that a large number of these cars were sold in New England and if any entries were made from this section there would be more likelihood of their being runabouts than touring cars. The rules have not made a profound impression.

CLEVELAND'S POSSIBLE TEAM

Cleveland, O., April 8—The F. B. Stearns Co. has asked the Cleveland Automobile Club for the right to represent that organization in the Glidden tour, agreeing to enter as many cars as the club may designate, but not fewer than three cars. The drivers the company would furnish would be A. S. Holden, Guy Vaughan and M. Leland. Mr. Stearns said if the company's request was granted a determined effort would be made to win the trophy for the Cleveland club.

DRAGON TEAM NAMED

New York, April 8—Three of the four Dragon touring cars in the coming A. A. A. tour have been officially entered by the following contestants: Harry Branstetter of the Chicago Motor Club and agent of the Dragon in that city; John Kane Mills of the Quaker City Motor Club, president of the Dragon Automobile Co., and A. L. Kull of the New York Motor Club and New York agent of the Dragon.

SEALED BONNET TEST

New York, April 6—Sidney S. Breese, of the Automobile Club of America, with Alexander M. Thackara, Jr., gave a demonstration of motor car consistency April 3, when he drove a 40-horsepower Westinghouse touring car 408 miles over Long Island roads—which were not in the best condition—in a single day, without violating the speed laws, or breaking the seals with which the engine bonnet had been fastened before the start. The gasoline consumption for the entire run was but 39½ gallons—something under 10 gallons per 100 miles. A course of 100 miles, approximately, was selected between Southampton and Long Island City, passing through Jamaica, Babylon, Patchogue and Southampton. Starting from Long Island City at 5 o'clock in the morning, the two alternated at the wheel.

RECORD FOR JARROTT

London, March 30—Charles Jarrott in a 40-horsepower Crossley, has succeeded in smashing the London-Monte Carlo record by 9 hours 30 minutes, making the journey in 35 hours 20 minutes. Jarrott lost 1 hour 40 minutes by getting on a wrong road and 15 minutes more repairing a broken lubricating pipe. The car was a new one just out of the factory and had not run 100 miles before starting after the record to the famous resort.

PLUM FOR THE NAPIER

S. F. Edge's Six-Cylinder Easily First in English Flexibility Test—Ford and Reo In

London, March 30—As was generally expected the six-cylinder Napier won the flexibility test held by the Crystal Palace Automobile Club, under permit from the Royal Automobile Club, last Saturday. Under the original conditions the win was so obviously predestined for Edge that the affair looked like being boycotted. But thanks to the free criticism evoked in the press the conditions were so modified that the event was saved and the Napier win given some sort of dignity. There were thirteen entrants and ten faced the starter. The route was from London to Bexhill-on-Sea and back with two speed tests on the private promenade of the Earl de la Warr at Bexhill thrown in—a high speed and a low speed; one to test relative efficiencies of engine, the other to show the other end of the range of flexibility. The road between London and Bexhill is very hilly for this country and though of good surface is regarded as a distinctly trying route. It rises from London to surmount the north face of the North downs, then drops across the Weald, rises over the South downs to again descend to the coast of the British channel. The distance for the double journey was about 125 miles and it was covered solely as a test of flexibility of the engine in the matter of changing gears. It was originally intended that 1,000 marks should be the maximum for this, with deductions for each change, but owing to the before-mentioned criticisms Colonel Holden, ex-chairman of the Automobile Club, was invited to work out a handicap formula which would take into consideration horsepower and weight. The result was that each car had a separate maximum figure and the low-powered cars got a fair

chance. Five hundred marks were awarded for the track trials, the range of speed of the most successful car being the standard from which the others were judged. For a non-engine stop run on the road 200 marks were awarded with deductions for each stop according to duration. The result, as everybody expected, was a win for the six-cylinder 60-horsepower Napier, but on the handicap it was run so close by the 14-horsepower four-cylinder Vulcan that the little car quite carried off the honors of the contest. One car was withdrawn owing to an accident to its mechanism and six cars got through with non-engine stop certificates. As the six-cylinder 40-horsepower Ford was in the competition the full particulars of the awards are given so that a proper comparison may be interesting to Americans.

In his report Secretary Hollands, of the Crystal Palace Automobile Club, says: "As will be seen from the result, nearly all the cars did most remarkably good performances, in fact, considering the difficulties of the London to Bexhill road, it would hardly have been thought possible by the average motorist that so many of the cars could have completed this distance with so few changes of speed, and at the same time do such high speeds on the Bexhill track. The honors of the day fell to the six-cylinder Napier both in the slow test, the speed test and the hill-climb. In fact in every test it had the highest possible record and a perfect non-stop, but a good deal can be said for the six-cylinder Ford, which performed very excellently, and it was unfortunate that at River hill, owing to its having to fill up with water at Tonbridge due to a leaky radiator, it did not do itself quite full justice. Colin Defries' Porthos was looked upon at one time as a very likely winner, but an accident, which resulted in his running over his mechanic and then his engine stopping, the slow speed test put him out of the competition. The Reo also showed well in the test."

RESULTS OF RECENT ENGLISH FLEXIBILITY TEST

Description		Running Weight	D ¹² ₃ A.C. Rating	Track Trials			Gear Changing				Engine Stops		Grand Total	
				Maximum Speed	Minimum Speed	Speed Ratio	Marks Max. 500	Number	Marks Lost	Maximum Possible Marks*	Marks	Number		Marks Max. 200
h.p.	cyls.	lbs.												
60 Napier...	6	4,569	50.0	57.69	3.48	16.58	500	0	0	594	594	0	200	1,294
14 Vulcan...	4	2,944	16.35	39.13	4.75	8.23	248	2	45	730	685	0	200	1,133
28 Mass...	4	3,684	29.8	40.18	6.39	6.28	189	1	28	571	548	1	180	917
24 Courier...	4	3,475	25.0	46.39	5.28	8.79	255	4	64	660	596	3	0†	851
40 Ford...	6	3,511	40.5	48.38	6.36	7.6	228	1	24	440	416	0	200	844
16 Reo...	2	2,876	15.0	34.28	7.03	4.88	147	1	34	492	458	0	200	805
30 N.E.C...	4	4,541	27.0	35.29	4.58†	69†	1	200	430	290	0	200	499
26 Brooke...	6	3,868	26.25	34.61	6.86	5.45	164	13	329	387	58	0	200	422
35 Maudslayi	4	4,428	33.3	40.54	5.16	7.86	238	1	200	458	178	1	0‡	416

* These figures denoted the maximum marks which each car could earn after the adjustment had been made in respect of the original 1,000 marks for horse power in relation to weight.

† Failed twice in slow test. Marks, therefore, based on speed of least successful car—No. 6, which retired—in that test and divided by 2.

‡ Lost 500 points, but only 200 marks constituted the full allowance.

§ Lost 200 points, but only 200 marks constituted the full allowance.

"I can't afford to stop up till several months necessary to tune up and race a car. It will interfere too much with my profession of consulting motor car engineer. I see it stated they are talking of racing the Vanderbilt cars back and forth on a road only 50 feet wide, with no other barrier in the middle than a chalk line. This would be foolhardy. With so many cars on the short course there would be constant passing, with the chance of frequent bumping in trying to pass one another. A 25-foot road is little enough, for a car at top speed will swing from side to side. I am no believer, either, in a cylinder-capacity basis for limitation."

A. L. A. M. FIGURES OUT

New York, April 10—Special telegram—

Some cats were let out of the Selden bag

at yesterday's trial in the New York supreme court of the suit of the trustees of the bankrupt Searchmont Automobile Co. against the Association of Licensed Automobile Manufacturers for a share of the profits of the alleged partnership, from which the plaintiff was expelled for non-payment of royalties. Figuratively speaking, they were most interesting to curious outsiders, who have not been given a chance at a peep at the licensed association's books. During the 4 years from March 1, 1903, to December 31, 1906, the suit showed, as reported by the court, that members, including those of the importers, branch, have paid to the association in royalties of \$518,460.64 on the basis of 1/4 per cent for American and 1 1/2 per cent for imported cars at their selling price. This is but two-fifths of the total royalty paid, the other three-fifths going direct to the Electric Vehicle Co. Among the license fees paid to the association from May 3, 1903, to December 31, 1906, the following are listed: Apperson, \$3,836.95; Cadillac, \$53,818.57; Electric Vehicle Co., \$12,608.31; Franklin, \$28,584.58; Locomobile, \$21,552.62; Oldsmobile, \$42,227.38; Packard, \$10,029.99; Pope, \$12,890.94; Pope Motor Car Co., \$34,526.75; Smith & Mayley, \$11,000.27; Stevens-Duryea, \$16,504.73; Thomas, \$20,751.62; Winton, \$41,400.00. Payment for litigation and expenses have been as follows: Ford suit, \$14,098.46; Panhard suit, \$15,553.08; retainers, \$20,654.94; salaries, \$20,669.24; total litigation, \$228,342.20.

ANOTHER NON-STOPPER

The Oldsmobile "Madam," which acquired fame when it plowed its celebrated mid-winter furrow from New York to Ormond a few months ago, started on a 1000-mile non-stop run yesterday. The start was made at 9 a. m. from the Motor Shop, 317 North Broad street, Philadelphia, with William T. Barth, the Oldsmobile factory expert, at the wheel, and E. W. Berger, John Pallas and O. W. Hoffman will alternate at the wheel. The car's ovaries were completed this morning and the car was sent ahead to do another thousand before the motor will be stopped. Joe edit

German Government Improves on System of Identification of Motor Cars in Fatherland

Washington, D. C., April 7—The government is advised that the former apparently successful system of numbering motor cars in Germany has been recently further improved and the means of identification simplified. The many precautions that are taken to safeguard the public have proved efficacious. A comparison of casualties in Germany with those in England and France make a favorable showing for Germany in the small number of accidents, and the percentage in which the ownership of the motor car was not

immediately established practically was nil. The new system of numbering divides Germany into thirty-eight sections. The kingdom of Prussia includes thirteen of these sections, which comprise the thirteen provinces of the kingdom; every motor car in Prussia must bear the kingdom number which is followed by the different letters to designate the respective provinces. In addition to the individual number of the motor car, the number of the province of Saxony, for example, the number of the car is followed by the letter "S." The kingdom of Bavaria, II; kingdom of Württemberg, III; kingdom of Baden, IV; kingdom of Hohenzollern, V; Roman numbers being followed by the letters A, B, C, etc., to designate the particular province. The kingdom of Saxony differs in that it uses numbers instead of letters to designate the provinces. The other states of Germany use the remaining Greek letters. The three free cities, Hamburg, Bremen and Lübeck, are designated by special letters, followed in every case by the number of the individual car. The shields bearing the numbers are all of a uniform prescribed size, and in every case they must be attached to the car so as to clear the ground by at least 18 inches, the object of this regulation no doubt being to avoid the numbers becoming illegible by dust.

Each car must carry the corresponding number in front, and both numbers bear a stamp from the police authorities, which is only placed on the glass or number plates after the latter have been attached to the car and examined by the proper police authorities. This car means of identification of motor cars is a matter of great importance in that the owner is liable to such heavy damages for any injury to persons or property occasioned by an accident, that the liability may be illustrated by the fact that the courts have compelled owners in some cases where lives have been sacrificed not only to pay large indemnities to the widows or children, but

in extreme cases to pay a penalty to minor children until such a time as they have reached an age when they can be considered self-supporting. This condition makes liability insurance a necessity for the owner of a motor car, which has been provided for by the leading companies at reasonable rates, when the amount of liability is taken into consideration. The rates are based upon the size and horsepower of the motor car. For instance, an 8-horsepower car is insured for an indemnity of \$9,520 for injury to a single person, \$19,040 for two or more persons, together with an indemnity of \$2,380 for property injured, at an annual cost of \$16.18. This, in a way, is a special rate, as it is granted only to the members of the largest motor car associations.

FUEL TEST SATISFACTORY

Atlantic City, N. J., April 6—The three Maxwell cars which left Trenton at 10:25 this morning for Atlantic City on the comparative fuel test run, reached here at 6 p. m., every car making an excellent performance. The run was in charge of H. A. Grant of Fairytown. He drove the alcohol car, while the one using gasoline was driven by Harry Caywood, and the car using kerosene was in charge of Charles Fleming. The run was made on a road which was without incident other than, notwithstanding the variance in density of the three hydro-carbons used as fuel, the cars all made a remarkable time on the latter city shortly after 12. After an hour's delay for luncheon the run was resumed to Atlantic City taking the usual route along the Atlantic pike. The official observers were Stanley I. Beech and H. G. Robinson, representing the Automobile Club of America. It is claimed by the company that the results of the run showed that the consumption of kerosene and gasoline in proportions arranged by J. D. Maxwell makes an ideal fuel. On the kerosene car are two carburetors feeding into one intake pipe, one carburetor being connected with a kerosene tank, and the other to a gasoline tank. The needle valves of these carburetors are so adjusted that the proportion of kerosene is much greater than the proportion of gasoline. This cuts the cost of the fuel in half, and, according to Mr. Maxwell, gives more power than the use of gasoline alone.

FOR NATIONAL ORPHANS' DAY

New York, April 8—The American Automobile Association has set aside June 12 as a national orphans' day and has asked the clubs throughout the country to promote the run on that day. The New York Motor Club, originator of the idea, has decided on that date and information comes from the Quaker City Motor Club of Philadelphia that it will follow suit. Chicago's Chicago Motor Club has appointed a committee to interest the Chicago Automobile Trade Association and the Chicago Automobile Club in the proposition and making it a success. Joe edit

FRANKLIN TESTS WOOD AND STEEL FRAMES

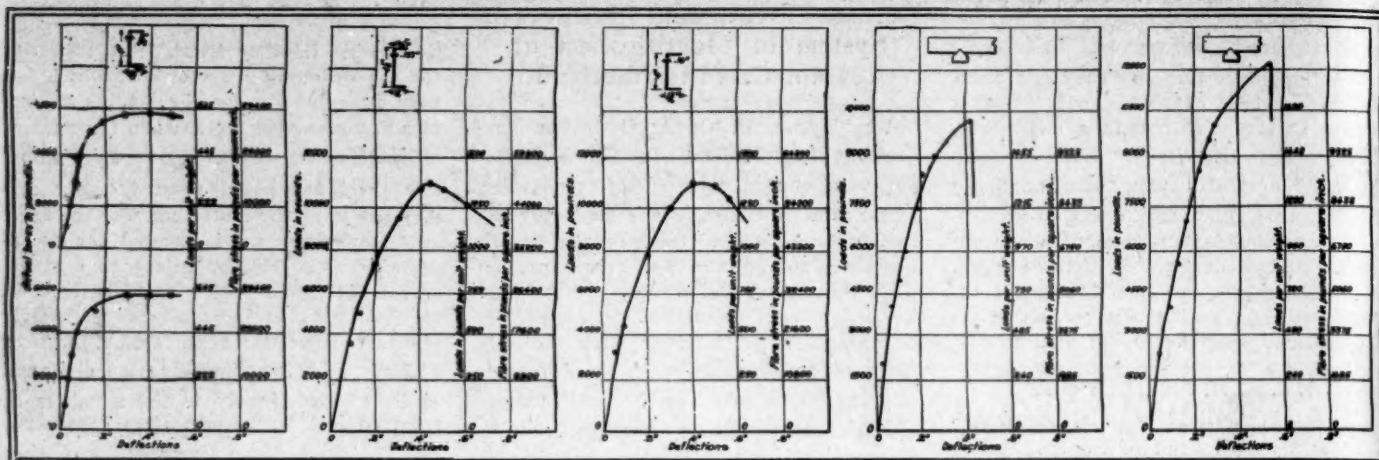


DIAGRAM 1

DIAGRAM 2

DIAGRAM 3

DIAGRAM 4

DIAGRAM 5

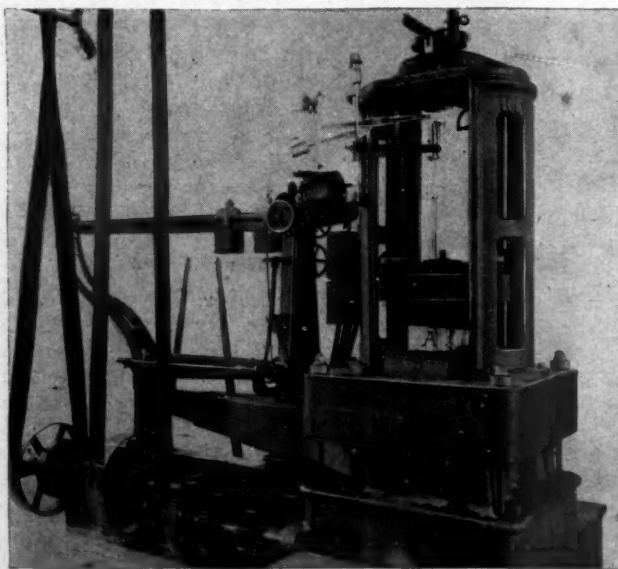
AMONG the many tests of materials and parts conducted by the H. H. Franklin Mfg. Co. in its Syracuse laboratory that with its laminated wood frames is particularly interesting and is referred to in detail later. In the company's regular inspection room, a view of which is given, however, appears the general scheme of inspecting many parts to insure their being uniform in the many cars. Beginning at the left of the illustration, the first man, marked A, is reading the print; B, next to him, is a man inspecting the pistons, which must be accurate to the fractional part of a thousandth of an inch, no variation whatever being allowed. The next man, C, is inspecting the brakes, upon which a variation is allowed of plus or minus 1-1000 on an inch. The next two men, D and E, are inspecting the fly wheels. It is necessary and required that these fly wheels be absolutely balanced and no limit is allowed in them. Next F and G from the left are after-gauges, and there is the clerk who keeps records of the department and sees that the stock does not accumulate on the floor after inspection. This picture does not show the entire department, as there are men at the lathe and men inspecting the crankshafts. A variation of 1-100 of an inch is allowed on throws and bearings in diameter and a variation in length of 1-1000 of an inch. However, the overall length must be to print, no variation being allowed. It must be understood that the limits given are the maximum at which a piece will pass, but usually they are accurate to gauge. It is very seldom that a piece comes so poorly machined as to necessitate putting it in the scrap. This is always done, however, if the dimensions do not come within the limits given above. There are fifteen men in this department who inspect the

parts as they are delivered from the factory, but even with this large force of men inspecting it is necessary to work until 9 o'clock each evening to keep up with the factory. Everything manufactured which goes into the construction of a car passes through this department for inspection. After passing the inspector, it is delivered to the finishing stock room, when it is ready to be used in the building of a car. The number of pieces passing through this department depends entirely upon the particular part in for inspection. It is, however, no uncommon thing for the department to inspect and pass thousands of pieces a day.

Besides this special inspection the Franklin company has conducted a series of tests on the relative value of steel frames with channel sections as compared with wood frames as used by the Franklin concern. The method of test appears in the accompanying diagram, in which the upper half illustrates the testing of a Franklin ash sill for a car frame and the lower half a similar method employed when using a section from a pressed steel

frame. The section of the frame used in the test and designated A is 30 inches in length and its cross section, at the left end, shows this sill to be made of three thicknesses of wood, each 4 inches in height, the three making a thickness of 12 inches. The section A is supported on two triangular pieces S marked support and placed 24 inches apart. The load L applied on the top of the frame section is brought to bear midway between these supports. This load can be increased at any ratio until the wood deflects to its limit and then breaks. The method of testing the sections from other frames is the same except that the precaution is taken to insert within the channels three blocks of wood, one over each support and the other at the point of applying the load. This precaution is to prevent the collapse of the lips of the channel and bring the stress onto the vertical portion of the frame. While this diagram illustrates the method the actual testing is carried out by a large device known as the Reihle testing machine and also illustrated. It has an immense metal platform B on which rest the supports S and over these lies the section A of the frame under test. The load L is accomplished by the machine as the part C is lowered and accordingly the amount of load applied on the section A is measured and the deflection of the section A of the frame is noted from time to time.

The metal frames tested were of open hearth carbon steel stock cut from a frame supposed to be of the size needed for a Franklin car model D car. Another frame section was chrome nickel steel ordered specially for testing purposes and the best that could be secured. The two ash sills tested were the stock regularly used in the company's cars. The results of these tests can be read from the set of five diagrams showing



FRANKLIN FRAME TESTING MACHINE



FRANKLIN INSPECTION ROOM, WHERE ALL PARTS OF CARS ARE INSPECTED BEFORE BEING ASSEMBLED.

curves which tell the story in themselves but which require a little information. Diagram 1 shows the results of a test made on December 12, 1906, of two sections of channel steel frames, which frames as shown in the little diagram at the top of the illustration had a vertical depth of 4 inches, a channel lip $1\frac{1}{2}$ inches wide and 5-32-inch stock was used in the frame. The vertical row of figures at the left side tell the number of pounds brought to bear upon the frame at the point L and so reads 2,000, 4,000 and 6,000 pounds, each vertical square representing 2,000 pounds of load. The horizontal side of the squares gives the deflection in inches, meaning the downward curve in the frame section immediately beneath the point L where the load was applied. Each square represents a 2-inch deflection. Thus in translating the upper curve with 2,000-pound load on the frame the deflection is practically $\frac{1}{2}$ inch, with 4,000 pounds it is 1 inch, and at less than 6,000 pounds the line turns abruptly to the left, showing a deflection of over 5 inches, which means the breaking point of the frame section. The lower curve in diagram 1 shows almost identical results.

There are yet two other columns of figures in this diagram to be interpreted, the first reading "Loads per unit weight," the figures being 0, 222, 445 and 645 pounds. The explanation is this: The way to compare different tests of metal and wood frames, to see how much superior one is to the other is to compare their strength per unit of weight. Each frame section, although 30 inches long, weighs slightly different from another section and this column shows the strength per unit of weight. Thus the frame

section weighed 9 pounds and with a 2,000-pound load each pound of metal in this frame was sustaining a load of 222 pounds, with a 4,000-pound load, the amount supported by each pound of the metal doubled and so on with the 6,000-pound load. The last column of figures reads "Fiber stress in pounds per square inch." The fiber stress is the extreme fiber stress of the beam figured from the regular beam formulae where the bending moment is equal to

$$F I$$

$$Y I$$

where F is equal to the maximum fiber stress, I is the moment of inertia and Y is equal to the distance from the neutral axis to the extreme fiber. This column is not the column which should be considered, however, as these beams, due to their shape, will give before the extreme fiber has a strain that is equal to its elastic limit even.

The general facts relating to the tests shown illustrated in the five curves, diagrams 1, 2, 3, 4 and 5, are in general the

same in that the supports are the same distance apart in each. In diagram 1 the metal in the frame was regular low-carbon stock generally used for frames and the blocks placed within the channels lips to prevent their bending were $\frac{1}{2}$ -inch wide. In diagram 2 the frame was made from chrome nickel steel heat treated. In test 3 the section tested was a steel channel section obtained from a standard frame maker. Tests 4 and 5 were made with 2 by 4-inch wood frames used on Franklin machines. In a study of the figures given in the column "loads per unit weight" exact data on the comparative merits is found and is as follows:

Stock	Ultimate load per unit weight Pounds	Load per unit weight at elastic limit Pounds
Open hearth.....	625	445
Carbon	625	445
Average	625	445
Chrome nickel...1,375		800
Steel, heat treated	1,375	775
Average	1,375	788
Ash-laminated	1,635	970
	1,945	1,080
Average	1,790	1,025

In per cent the result is as follows: Ultimate load per unit weight of ash is 30 per cent higher than the chrome nickel steel. Ultimate load per unit weight of ash is 185 per cent higher than the open hearth carbon steel. Load at elastic limit of ash is 30 per cent higher than the chrome nickel steel. Load at elastic limit of ash is 130 per cent higher than the open hearth carbon steel. Motor Age regrets that tests on armored wood and angle steel and angle iron frames as well as others of tubular frame members are not included in this series, but information on them will be given later.

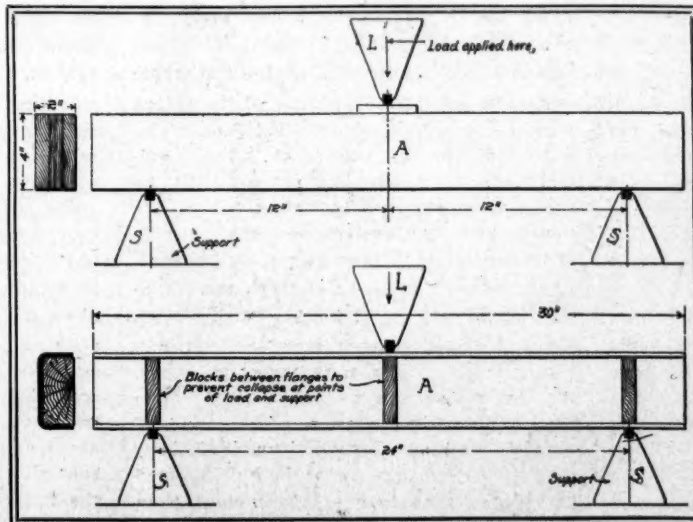


DIAGRAM ILLUSTRATING FRANKLIN FRAME TESTS



THE READERS' CLEARING HOUSE



MORE ON GEAR RATIOS

Dayton, Wash.—Editor Motor Age: I see in your excellent paper that F. A. C. is answered by Charles W. Hunt as to the proper ratio of gear for a motor car which is used in a hilly country. I wish to confirm his opinion. I live at the foot of the Blue mountains in eastern Washington, where we have some hills. They run from a few casual miles long and at times are quite steep. I first had a small curved dash Oldsmobile runabout which was geared to one to three and one-half, but found that it was too high a gear for my work. I procured a new rear axle, which gave a gear ratio of four and one-half to one, and it was much more difficult in climbing hills. My next car was a 1905 Franklin model E runabout, with a ratio the same as the Oldsmobile—three and one-half to one—and found the same difficulty with it until I procured new sprockets both for the rear and front drive, which gave about four and one-half to one. This materially improved matters. While the higher geared cars do very well on comparatively level roads, they do not climb the long hills of this section as they should and with a two-speed car I found great difficulty in getting from the low to the high gear, after having to run for even a short distance on the low gear on account of the momentum of the car not being high enough, although if the speed had been up it would have run well on the high gear. This is an argument for three speeds, which any one who has had experience will recognize at once. This matter of sending to a hilly country cars which are geared too high is one which should be more thoroughly investigated by the manufacturers. Again, the relation of weight of the car and load compared with the engine power and the gear ratio is one which should be taken into consideration by every purchaser. Most of the cars seem to me to be geared too high for this country, and the manufacturers seem to consider the conditions in their immediate neighborhood as typical of all sections. While the Franklin people treated me very nicely indeed, yet it ought not to be necessary for the user out here always to have to make the change before he can use his car. A friend of mine purchased a machine just like mine last year but did not take advice and have the gear ratio changed. Now he is dissatisfied and wants to sell and get a heavier powered car. But if he is not careful about the gears he will have such a heavy car he will have the same difficulty now. I should not advise any one to take to a gear ratio of less than four to one in this country and five to one would be better still. It will allow of taking more of the hills on the high speed,

and will give more reserve power for exceedingly steep pitches or soft ground. My car is first geared would run 40 miles an hour on good roads, but that is too speedy for ordinary running, as I can now travel fast enough to make it dangerous at 30 miles per hour.—E. H. Van Patten, M. D.

TWO CYCLE VS. FOUR CYCLE

Port Jervis, Pa.—Editor Motor Age: Will you kindly discuss in the Readers' Clearing House the arguments for and against the two-cycle motor as compared with the four-cycle, explaining why the former is not so commonly used as the latter in motor car construction? Also give me the address of the Bailey Automobile Co., which had a runabout on exhibition at the recent Boston show, as told in your issue of March 14.—W. W. V.

In the four-cycle engine the operations of induction, compression, expansion and exhaust are positively governed by the movement of the piston, and therefore will take place without important variations whether the motor is running fast or slow and on open or closed throttle. This statement is subject to qualification by reason of the inertia of the gases at high motor speeds, since this inertia necessitates the inlet and exhaust valves opening and closing later than would be necessary at low speeds. Broadly speaking, however, the statement holds good. In the two-cycle motor, on the other hand, the burnt gases are pushed out of the cylinder by the entrance of the fresh charge under pressure and the fresh charge itself is not sucked in by the motion of the piston, but blown in by virtue of its being previously compressed in the crankcase. The difference may succinctly be stated by saying that the four-cycle engine pumps the gases in and out of the cylinder, whereas the two-cycle engine blows them in and out. Moreover, in the four-cycle engine each operation of the cycle has approximately a full stroke of the piston in which it may take place, whereas in the two-cycle engine the whole operation of the exhaust and induction must occur within about a third of a single revolution of the crank. It is evident that the blowing process will be much more affected by the speed of the motor and the position of the throttle than the pumping process, and consequently the two-cycle motor is much more limited as to both the reduction of the throttle and the maximum speed it can efficiently attain than the four-cycle motor. As the motor car motor is required to work efficiently under a wide range of throttle and speed conditions it follows that the two-cycle motor is handicapped for this service to a greater extent than for stationary or motor boat work. Another obvious difference between the two types of engine is that in the two-cycle engine the incoming and burnt gases will mingle to a greater extent. If the engine is badly designed some of the fresh charge may even find its way out from the exhaust port before the latter is covered by the piston. This is avoided in the latter class of engines by what may be called experimental designing and by throttling the fresh charge so that less than a cylinderful is permitted to enter the cylinder. This and the work of compressing the air in the crankcase cause the mean effective pressure of the two-cycle engine to be considerably lower than that of the four-cycle engine, the difference being approximately in the ratio of two to three. Obviously this implies somewhat lower fuel economy. The argument in favor of the two-cycle motor is its extreme simplicity since few or no valves are necessary, and owing to the greater frequency of the impulses fewer cylinders are necessary for the same work. For this reason the two-cycle motor has achieved a limited favor for motor car use, and it is quite possible that its popularity may increase. The makers of the Bailey runabout, heretofore described as S. R. Bailey & Co., Amesbury, Mass.

using the AUTOSPARKER

Columbus Junction, Ia.—Editor Motor Age: I have a Molsinger Autosparker. I would like to have you inform me through the columns of the Readers' Clearing House if the sparkler can be used to charge the storage batteries used on most of the modern motor cars.—Lowan.

The Autosparker is a battery charger and will charge storage batteries for ignition purposes. It will be necessary to put a switch in the circuit between the Autosparker and the storage battery, so the circuit can be broken when the Autosparker is idle. The Autosparker is a shunt wound dynamo and will draw current from the storage battery if the circuit is not broken. When used for charging purposes any kind of coils may be used, as the current simply is used to keep the storage cells constantly charged up to their normal voltage. The dynamo can be regulated, while running, to give off any voltage required, up to 13 volts. After the current consumption of the coils from the battery is determined, it is only necessary to regulate the dynamo to put in as much current as is being taken out in order to keep the batteries in a constantly charged condition. A switch should be used between the batteries and dynamo so the dynamo can be cut out when the engine is shut down, in order to save running out the batteries. The manufacturer now has a drive attachment for the Autosparker to

work in connection with a flexible shaft, giving an opportunity to set the spark at the proper angle and away from the flywheel, as desired. It can be used with the jump spark system direct with special jump spark coils or with batteries in connection with the storage system, either of which will give generally satisfactory and economical results.

STEAM CAR MAKERS

San Francisco, Cal., Editor Motor Age: Please inform me in the Readers' Clearing House the names of all steam automobiles made in the United States and the addresses of the factories. A Subscriber, White, Co., Cleveland, O.; Stan-ley, Motor Carriage Co., Newton, Mass.; Ross, Lewis St. Ross, Newton, Mass.; Johnson, Johnson Service Co., Milwaukee, Wis.; Clark, Edward & Co., Dorchester, Mass., besides one or two minor concerns, all no longer in business, is writing to you.

USES FELT WASHERS

Philadelphia, Pa., Editor Motor Age: I noticed in a recent issue of Motor Age a request from John Y. Noble for a method of preventing oil from working out of the differential case into the brakes. Before he attempts drilling into the axle tubes I would suggest using felt washers. The latter can be procured from the machine-

turers, who undoubtedly can be located. The best method of applying them I think is to remove the wheel and axle, all or part of the axle and after determining the distance between the end of the tube and the differential bearing force the washers on at a time over the axle to within 3 or 4 inches of the inner bearing. This can be easily accomplished with a piece of gas pipe or brass tubing of sufficient size to slide over the axle and inside of the axle tubing. Five or six of these washers, costing about 5 or 6 cents each, ought to materially remedy this trouble. Should the oil still persist in leaking additional washers can of course be used. J. M. B.

TIMER NEEDS CLEANING

Worcester, Mass., Editor Motor Age: I have a two-year-old model 1913 Ford with two sets of six cells each of dry 800 cells, Splitdorf coil and double switch. The machine with good tune, but the timer is defective. The next time I want to start the coil will not buzz, even when no change is made in the points. I have tried the switch. The other day it was out in the country and stopped about a hour. It had worked fine but when I wanted to start there was no buzz. I said in paper both the platinum points and adjusted the top and bottom points. One set of but-

teries tested four to five amperes. This I did not pretend to use. The other set showed 2 to 5 amperes. When I switched to the old battery it started the engine a little. Then I switched on the other and it went all right. What is the trouble and what can I do to remedy it? H. P. McLane.

It is quite possible the trouble is due to oil on the timer. This oil, if present, seems to spread in a film over the timer and prevents perfect contact at first. Although after the motor starts it is partially rubbed or squeezed away by the pressure of the contact finger or roller. In this condition the current from a fresh battery will frequently penetrate the oil sufficiently to cause the timer to buzz, whereas a depleted battery will not do this until the oil film has been reduced by running the motor. The remedy is a fresh battery or cleaning the timer with waste and a little gasoline.

CAST-IRON BRAZING

Editor Motor Age: Will you please give me the name of some reliable firm that brazes cast iron? I have a coating which I want to be brazed. A. B. Callahan, National Brazing Co., 1831 West Jackson boulevard, Chicago, Ill. This work is known as the Pennsylvania.



MOTOR CAR SHOP KINKS



CLOGGING OF INTAKE PIPES

A possible cause of weak running which is seldom thought of is the adhesion of road dust to the inner surface of the intake pipe leading to the carburetor. The spray of gasoline from the carburetor keeps the intake pipe leading to the engine clean, but a film of oil coming from nowhere in particular seems to spread over the inner surface of the pipe just mentioned and any dust touching it stays there. Cases have been known of pipes 2 inches in diameter being so choked with dust in this manner that a finger could not be inserted in them without difficulty.

GRAPHITE FOR GEARS

A planetary transmission gear which persists in overheating may be kept cool by the use of graphite grease in moderate quantities instead of oil. This grease generally is applied in a body similar to non-fluid oil, and the graphite maintains the lubrication temporarily in case of the grease escaping. Only a small quantity should be used, as the grease is very stiff and does not soften under heat like some kinds of grease generally used.

STANDARD ARBOR

A shop which repairs many cars of the same make can do advantage to keep a standard arbor of the exact diameter of the crankshaft and use this with the lead-

ers to align the end bearings of the crankcase when these have to be re fitted. The intermediate bearings can be scraped approximately true by aid of the same arbor, but enough should be left for a final scrape with the shaft itself in place, so as to give a nice fit.

A GOOD WHEEL PULLER

An owner who oiled the ball bearings of the rear wheels of his car with a squirting can and thereby, of course, failed to oil the inner bearing at all, recently made it necessary for a repair man to use a special tool to get the wheel off the axle, as the whole bearing was so thick with rust that the wheel could not be removed by ordinary means. A puller was improvised out of a flat iron bar, whose ends were connected to opposite spokes by longer strips. In the middle of the bearing a hole was tapped for a set screw, which bore against the end of the axle and was turned by a heavy wrench.

COUNTERSINKING BRAKE BANDS

A simple tool for countersinking both the ends of a brake band lining is a special drill having a tip formed at its end and having four straight flutes on the body of the drill. When the drill is turned, the flutes cut into the lining and the tip countersinks the ends of the flutes.

RESEATING A BALL CHECK

One way of reseating a ball check valve is to solder a steel ball of the proper size into the end of a brass tube and twiddle the tube back and forth in the valve seat in the valve seat with powdered glass or sand and oil. It is best not to use emery for this purpose, as it tends to embed itself in the brass. Another plan is to use a rose reamer with a breast drill or drill press. If the reamer is carefully made it will produce nearly a true seat, which may be made perfect by lightly tapping the ball with a hammer. A block of brass should be interposed between the ball and the hammer so as not to mar the surface of the former, and thus throw it somewhat out of a true sphere.

SHOPMAN'S SCREWDRIVER

A good screwdriver for a repair shop is formed in the shape of a tee about 15 inches long with a crossbar 12 or 14 inches long. To start a screw, which is slightly rusted in place, the screwdriver is stretched by the left hand holding the crossbar near the handle, while with the right hand the other end of the crossbar is stretched with a slight hammer. The crossbar should not be smaller than 1/2 inch in diameter and must be made of a material which will stand when it is made to turn the screw.

is made to turn the screw.

MOTOR CAR DEVELOPMENT

PENNSYLVANIA CAR

35-40-Horsepower
Cone Clutch
Selective Gearset
Shaft Drive
Floating Axle
Roller Bearings
Rear Wheel Brakes
Battery Ignition
Mechanical Lubrication

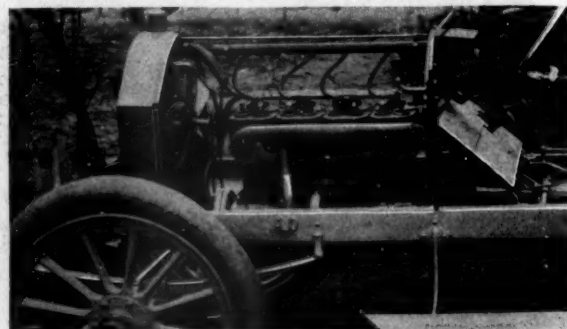
A NEW star has appeared in the motoring firmament of the Keystone state. Its maker is the Pennsylvania Auto-Motor Co. The center of location is Bryn Mawr, Pa. The car is known as the Pennsylvania and is made in five-passenger touring car and roadster styles. Generally speaking it is a 35-40 horsepower product, carrying a Rutenber motor with speed variations made through a cone clutch, three-speed selective gearset and propeller shaft communication with a Timken design of rear axle. The touring car has a 118-inch wheel base, the roadster one 4 inches shorter and the respective weights of touring car and roadster are 2700 and 2200 pounds. Still another slight difference between the roadster and the touring car is that the front axle is moved forward in the roadster, occupying a position directly under the front of the radiator, and this model is also geared at two and one-half to one, whereas that of the touring car is lower. R. H. Croninger, recently sales manager of the

Dayton Motor Car. Co., is the second vice-president and general manager of the concern and at present eight cars a week are being turned out, the factory force numbering between ninety and 100 men. The factory is one block from the Pennsylvania railroad and plans and specifications are ready for 90,000 square feet of steel and concrete buildings, specially designed for motor car construction and which buildings will cost approximately \$125,000. For next season 500 cars is the output and the first 1908 cars will be on the road July 1.

In bringing out the Pennsylvania car, the intention has not been to produce anything radical or incorporate in its makeup one side without abnormal congestion. In principles not already existing in four-achieving this end, the exhaust manifold cylinder machines. Rather it has been the aim of the company to put together a machine in which every part, such as motor, transmission and rear axle, are known quantities, already thoroughly tested and found on many standard makes of American car.

The 1907 Rutenber motor employed—with its 4½-inch bore, 5-inch stroke, separately-cast cylinders with valves in ports on the left side and operated from a single camshaft, its water pump on the forward end of this camshaft, its commutator on the top of the vertical shaft between the fourth cylinder and the dash and on a level with the top of the cylinder, and its intake and return water flow pipes connected with the center of the cylinder heads—will prove sufficient to recall the general principles in this motor. Reference might be made, however, to the carrying of the five crankshaft bearings in the upper half of the crankcase, which

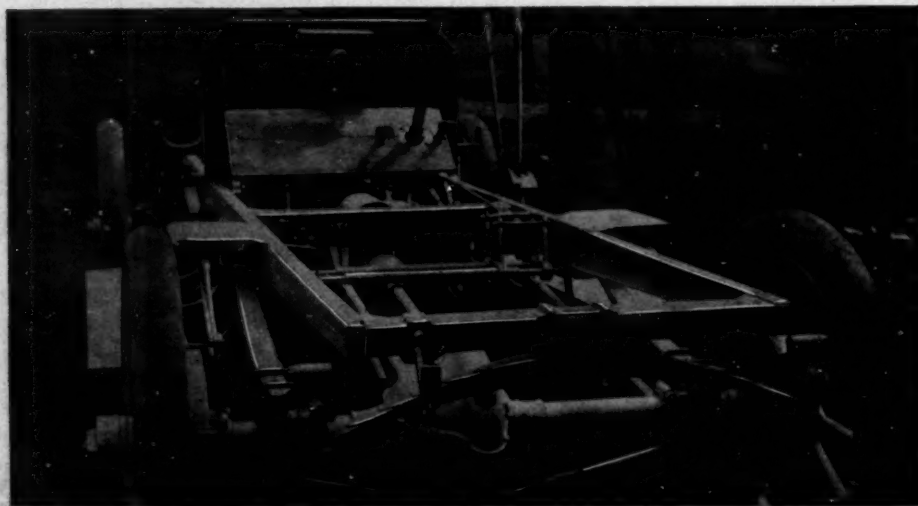
portion is supported by lateral arms on the sub-frame of the car. Attention also is invited to the presence of a six-feed Kinwood oiler carried on the right side of the crankcase opposite the third and fourth cylinders and driven by an eccentric and strap from the vertical timer shaft. Oil leads connect with the cylinders and other more important motor bearings. Mixture is supplied from a Schebler carburetor carried low at the left, reference to which calls attention to the peculiar style of intake and exhaust piping, a style especially made for the Pennsylvania and one permitting of using both these pipes on the manifold in four-achieving this end, the exhaust manifold cylinder machines. Rather it has been the aim of the company to put together a machine in which every part, such as motor, transmission and rear axle, are known quantities, already thoroughly tested and found on many standard makes of American car.



FRONT HALF PENNSYLVANIA CAR CHASSIS

integral branches for each cylinder. The intake is a compound Y, the main Y directly above the carburetor. There is an additional one for the front two and the rear two cylinders. Ignition current is taken from batteries passed through a four-unit dash coil and, by means of the timer already referred to, delivered to the plugs carried in the valve caps above the intakes. Support of the high tension wires to the plugs is through a fiber tubing carried well above the tops of the cylinders. The water circulation is standard, and assisting it in the cooling of the cylinders is a belt-driven fan supported from the housing for the half-time gears. Throttle and spark controls assume the form of levers supported on a stationary quadrant over the steering wheel.

Points relative to the cone clutch carried in the flywheel are 10½ degree angle, leather-facing, 450-pound engagement spring and double end thrust bearings, one for the clutch thrust proper and the other for the spring thrust. To permit of the dismounting of the clutch without derangement of the transmission set a double universal coupling is interposed between the two. The sliding gearset is of that style in which the main and countershafts are carried in the same vertical plane, both on annular ball bearings and the countershaft



PENNSYLVANIA CAR WITH REAR PLATFORM SPRING SUSPENSION



directly above the mainshaft. The gearbox is an aluminum casting carried on the same sub-frame members which support the motor. Operating in the gearset are two sliding units for the three forward variations and the reverse, all brought into play by a side lever working in an H quadrant, this lever being located contrary to general custom outside of the emergency break lever. A piston interlocker acts between the low speed and the reverse, rendering it impossible to go into the reverse with the car moving forward. Gears and shafts are of usual construction. Connecting from the gearset to the back axle is a conventional propeller shaft with universal joint at its forward end and another similar joint at the rear end

The rear crosspiece is larger than ordinarily in that it is attached to the transverse portion of the platform spring. Crosspieces of the frame are re-enforced by angle plates. Spring suspension in front is through a set of semi-elliptics 40 inches in length and with leaves 2 inches wide, the same as used on the platform construction. Steering is through a worm and nut gear with efficient lubrication.

MOTOR CAR LITERATURE

The best catalogue of the season from an information standpoint is that issued by the F. B. Stearns Co., of Cleveland. A good half-tone illustration of the car is given on the front page and the remainder of the illustrations are line drawings showing front and rear hub bearings, side section of motor, end section of motor, vertical clutch section, differential brake operation, emergency brakes and radius rods, steering gear, water pump, carburetor, plan and vertical sections of transmission set, plan of chassis, and side and end sections of new carburetor. Supplementing these are key lists published on the same pages and explaining the different parts. The descriptive matter is a simple detailed outline of the car, the metals used and arguments in favor of Stearns construction. The rear portion is a six-page treatise on suggestions for adjusting and operating Stearns cars. The book is 11 inches long by 8½ inches wide, containing in all thirty-two pages.

A line of illustrations similar to those appearing in the last year's catalogue are made use of in the present literature of the

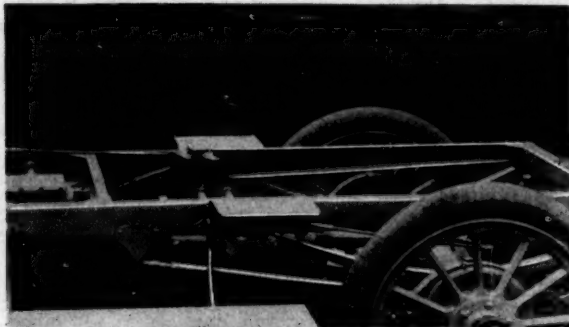


PENNSYLVANIA CAR CONTROL

Oscar Lear Automobile Co. Naturally these show the motor and its peculiar cooling system. Incorporated in the book is a section devoted to the Frayer-Miller truck.

The Timken Roller Bearing Axle Co. in its catalogue is a believer in illustrations and uses working drawings and wash drawings showing its bearings as mounted in differentials, front and rear hubs, steering gears and transmission sets. The opening page is the company's dimension sheet No. 10, which contains all details for its many styles of bearings.

The Commercial Motor Truck Co., Plymouth, O., is circulating its first comprehensive catalogue on its commercial cars, and illustrates therein its six styles of machines embracing stake trucks, side board trucks, covered, vans, passenger buses and sight-seeing vehicles. The parts are briefly described and a specification table referring to all the machines given.



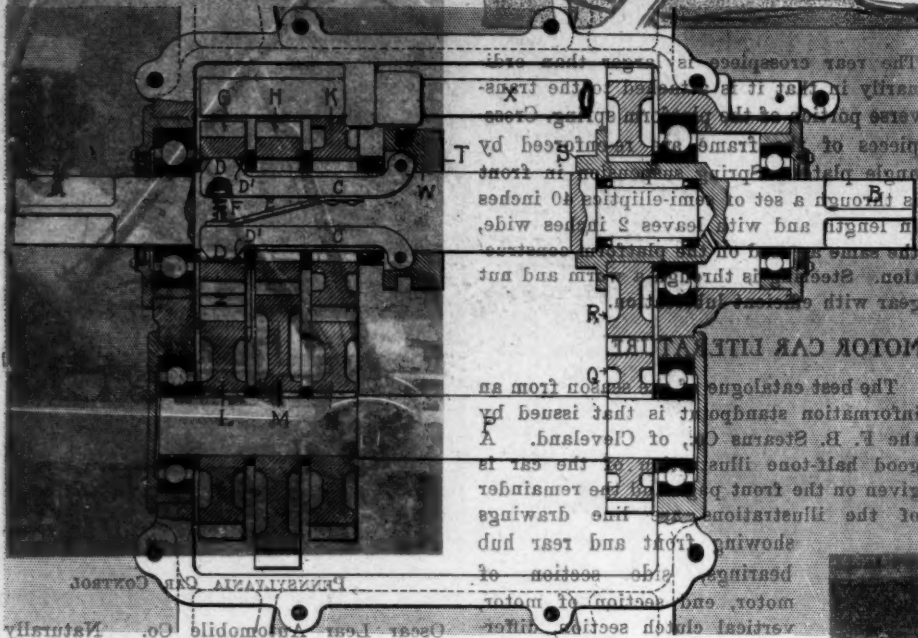
REAR HALF PENNSYLVANIA CAR CHASSIS

which is also a sliding member. Both joints are standard styles for this season. Taking the strain off this shaft are a torsion paralleling the shaft and a pair of strut rods connecting between the ends of the axle housing and the brackets on the side pieces of the frame at a point opposite the universal joint in the driveshaft. These strut rods have a turn-buckle adjustment and forward globe endings. The rear axle, of the Timken floating type, has adjustable roller bearings throughout, with the pinion and pinion shaft supported through two cages of these bearings. The outer ends of the driving axles are squared and machined for attachment through driving clutches which engage with the hub of the wheel. Braking is confined to a double set of rear hub brakes, pedal brakes for running use being clamping bands operating on these drums, whereas the lever-applied emergencies are expanding members operating within the same drums. The forward axle is an I-beam construction centrally dropped and corresponding in every detail with the conventional 1907 axle. In a cursory review the main frame should be noted to be a pressed steel construction with 4½-inch vertical depth in the center and 1½-inch channel lips. These pieces have the regulation taper fore and aft.



PENNSYLVANIA FIVE-PASSENGER, 35-40-HORSEPOWER TOURING CAR

DEVELOPMENT BRIEFS



CHARLES H. SCHALINGER'S SLIDING KEY GEARSET
 The best catalogue information standpoint is that issued by the E. R. Thomas Motor Co. of Cleveland. A good half-tone illustration of the car is given on the front of the remaining drawings of the illustration showing front and rear hub bearings, side section of motor, and section of motor.

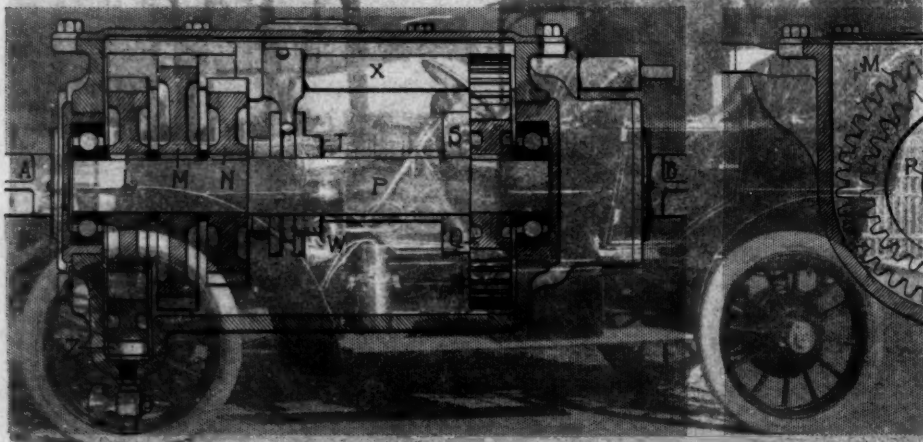
Charles H. Schalinger, of Detroit, Mich., associated with the Detroit Auto Vehicle Co. of that city, is the inventor of what he terms a positive gear transmission but which is in reality a sliding key arrangement for locking the gears to the main shaft whenever desired. The gearset resembles an individual clutch style in that the gears on the mainshaft are always in mesh with those on the countershaft and that they do not slide. The gearset as illustrated gives three forward speeds and reverse. In the line illustration showing the arrangements of the shafts and gears as seen from directly above, the mainshaft is coupled at A with the motor and has connection through the short shaft B with the drive shaft to the back axle. On shaft A is a series of three gears, G, H and K, all mounted loosely on the shaft A and two of them, H and K, constantly in mesh

with the two corresponding gears M and N mounted rigidly on the countershaft P. Gear Q on the mainshaft meshes with an idler gear Z, and this idler in turn with gear D on the countershaft, this arrangement being for reverse drive. Carried on the mainshaft A is a sliding collar W which is moved through the intermediary of the shifting bar X. The pair of keys, C, is hinged at one end to this sliding collar and at their other end carry expansions, D, which engage with opposite keyways, D, within the hubs of the gears, thus locking the gears to the shaft. These springs are held apart by a flat leaf spring E, and further separated by a coil spring F, held in opposing sockets in the ends of the arms C. In the illustration the gear G is locked to the shaft A and this gear, being in mesh with idler Z and this in mesh with gear L on the shaft P, the power is transferred to this shaft but is communicated

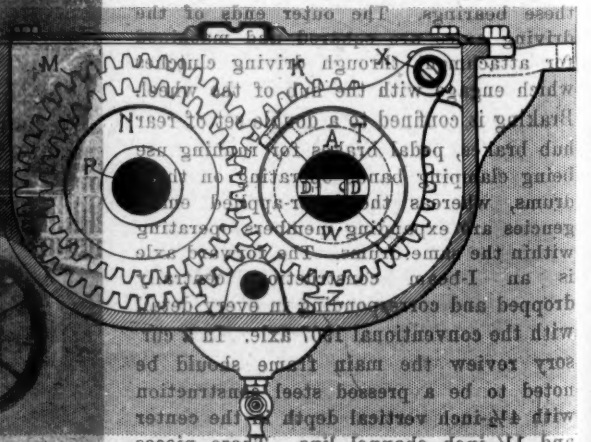
to the short shaft B through the gears Q and R which are constantly in mesh and are keyed in place on their respective shafts. This particular arrangement gives reverse speed and by shifting the collar W to the right the ends D of the keys C will be pulled free of the gear G and enter keyways in gear H for first speed and if carried still further to the right entering the keyways in gear K and locking it to the shaft for second speed. For direct drive the collar W is moved to the right further until its clutch face T locks with the corresponding clutch face S formed in contact with the short shaft B. In the end view of the gearset to the reverse gear Z is seen housed in the base of the case and the exact size of the keyways D on the opposite sides of the shaft A can be noted. The reverse gear is also seen in the vertical side section and the corresponding clutches T and S for direct drive are more conspicuous than in the other illustrations.

NEW MODEL THOMAS

About a month a new type of high-powered runabout will be placed on the market by the E. R. Thomas Motor Co. The distinctive feature of the new model is a special motor of great power with four cylinders cast separately and a fly-bearing crankshaft. The other features follow the general lines of the Thomas Flyer and include: two separate and independent systems of ignition, a transmission with four speeds forward and reverse, three-disk metallic clutch, drop-forged T-beam axles front and rear, double side chain drive and 36-inch wheels. The double ignition system includes a Bosch magnet and batteries working through an Atwater-Kent spark generator, each with a separate set of spark plugs. The new runabout will seat three, two in front and one in a rumble seat in the rear where the tool box will also be located. Tests of the new model car have been in progress at Buffalo during the past 60 days.



VERTICAL SIDE SECTION OF SLIDING KEY GEARSET
 PENNSYLVANIA FIVE-LASSINGER, 25-30 HORSEPOWER TOURING CAR



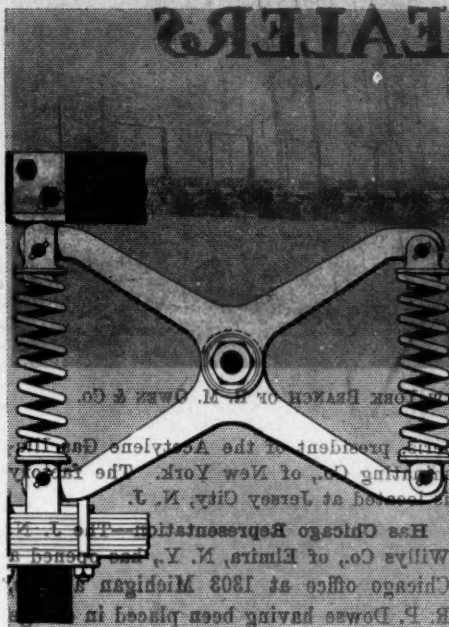
VERTICAL END SECTION OF SLIDING KEY GEARSET
 HAVE THE REGISTRATION LABEL FOR END AND SIDE

Spring Piston Spokes—No. 849,095, dated April 2, to A. A. Ambler, Springfield, Mo.—The wheel hub is made quite large and carries eight radially disposed short cylinders which look like stub spokes. In each cylinder works a piston attached to the inner end of a wheel spoke. Between the piston and the guide for the piston rod of spoke is a coil spring for absorbing jar. The outer end of the spoke connects with the felloe through a pair of links.

Spring Kim—No. 849,156, dated April 24, 1906. The wheel has two rims, one of small diameter secured to the ends of the spokes and one of slightly larger diameter and concentric with it and carrying on the wheel tire, these rims are separated by two series of linked chains, each link being a miniature full elliptic spring. The series of links nearest to the rim of small diameter is substantially parallel to the elliptics of one series; those in the recesses formed by the joining of the elliptic links in the other series.

Segmental Rim—No. 848,971; dated April 2, 1907. M. Cosset, Paris, Fr. The wheel rim is a series of segments, of T cross section, one segment for each two spokes. The segments are pivotally united at adjacent ends. The spokes are in pairs and semi-circular in shape, being spring metal straps intended to absorb jar and so eliminate pneumatics. The spokes in each pair are oppositely bowed, forming an elliptical space between them, and unite at their outer ends to the middle of a segment of the rim. At their inner ends they are held to the hub between annular flanges.

Spring Wheel—No. 849,223 to J. H. Fiegel, Malmitz, Ger.—Resiliency in this wheel is by means of three spokes spaced at 120 degrees to one another, pivoted at their outer ends to the wheel rim and pivoted at their inner ends to a set of three buffer bars. These buffer bars are pivoted at their outer ends to the wheel rim and at their inner ends to a set of three buffer bars. These buffer bars are pivoted at their outer ends to the wheel rim and at their inner ends to a set of three buffer bars. These buffer bars are pivoted at their outer ends to the wheel rim and at their inner ends to a set of three buffer bars.

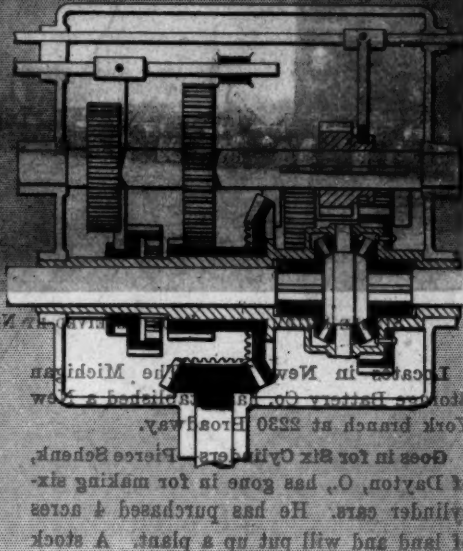


MAZZOCCO'S SHOCK ABSORBER

rim, but at their inner ends tear tangentially upon the wheel hub. On the three spokes are coil springs which absorb the jar, each spoke being a two-part member, one of which telescopes within the other, the telescopic action being according to the tension of a spring.

Resilient Wheel—No. 848,885, dated April 2; to D. R. C. Devine, Philadelphia, Pa. Between the outer and inner concentric rims of this wheel is a series of eight C-shaped springs with the ends secured to the inner rim's outer face and the back of the curved portion clipped to the inner face of the outer rim.

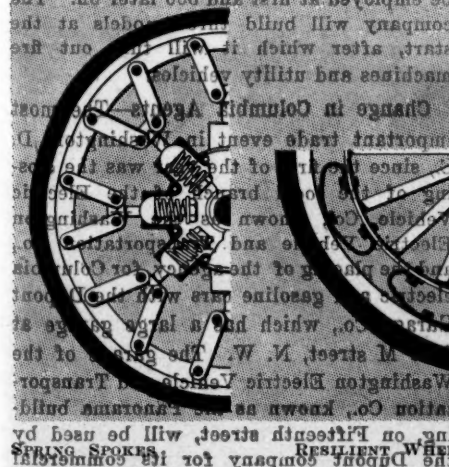
Shock Absorber—No. 849,150, dated April 2; to W. Mazzocco, Plainfield, N. J. This shock absorber appears like an X-bracket with vertical spiral springs separating the ends of the arms and two of the arms shackled, one to the frame and the other to the center of the spring. The



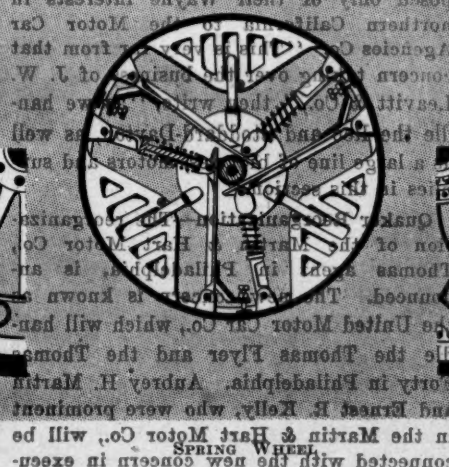
company will be formed.

PHOLON'S SLIDING GEARSET
Penrose Shifts—Morris Penrose, former-
and, and shaped into a pair of interlocking
inverted pyramids together at the top and
the arms. The pair is held together by two
two spirals.

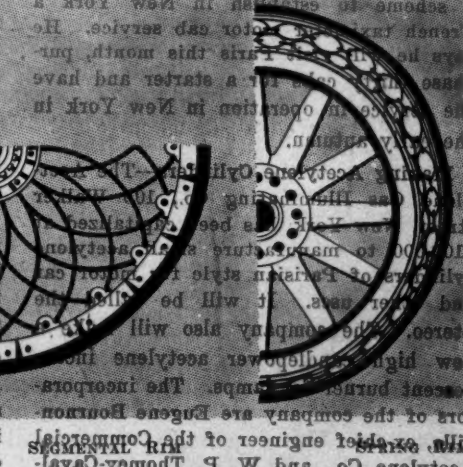
Sliding Gear Transmission—No. 848,766, dated April 2, 1907. E. H. Pelton, Springfield, Mass.—This sliding gearset is designed to have its main and countershafts carried transversely of the car and this set divided mainshaft carrying sprockets on the ends for side chain drive. Drive from the motor to the mainshaft is through bevel gears within which bevel is a differential gear connecting the halves of the mainshaft of the set. The set gives three forward speeds and one reverse, the drive on high speed being direct. The set operates on the selective principle, there being two sliding units on the mainshaft and the other on the countershaft, these actuated through a pair of shifter rods carried within the gearbox.



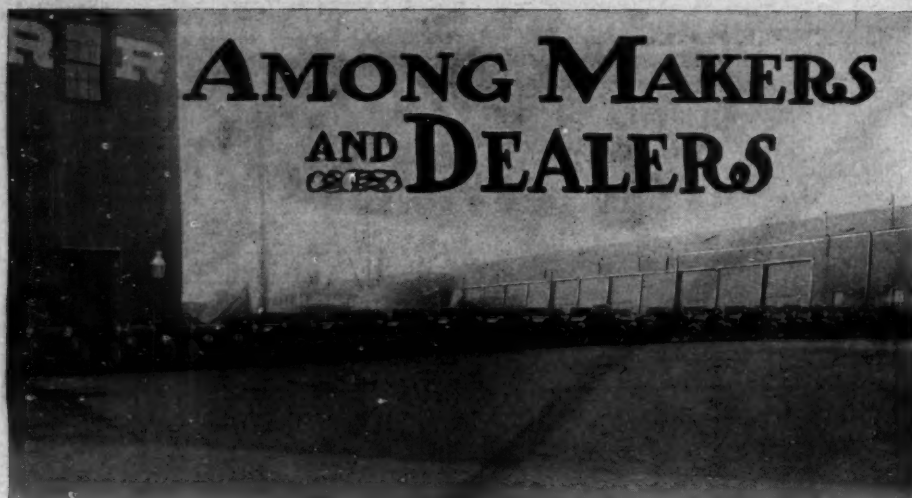
SPRING SPOKES. RESILIENT WHEELS.



SPRING WHEEL



SEGMENTAL RIM



SINGLE SHIPMENT OF REOS RECEIVED BY NEW YORK BRANCH OF R. M. OWEN & CO.

Locates in New York—The Michigan Storage Battery Co. has established a New York branch at 2230 Broadway.

Goes in for Six Cylinders—Pierce Schenk, of Dayton, O., has gone in for making six-cylinder cars. He has purchased 4 acres of land and will put up a plant. A stock company will be formed.

Penrose Shifts—Morris Penrose, formerly manager of the Philadelphia branch of the Fisk Rubber Co., has accepted a similar position with the recently incorporated Auto Equipment Co., of the same city.

New Winton Garage Ready—The Winton Motor Carriage Co. has taken possession of its new garage in Pittsburg, built to replace the one destroyed by fire. The building was finished in time for the show and Manager Earl Kiser is now in charge.

Morley Resigns—Walter G. Morley has resigned his position as secretary of the Aerocar Co., Detroit, Mich., to become more prominently identified with another industry. The Aerocar board of directors presented him with a handsome testimonial as a token of its appreciation of his services.

Another Taximeter Scheme—W. Irvine Fickling, of New York, known to the motor car trade as a body and top builder and selling agent for the Gabriel horn, is engaged with two other capitalists in a scheme to establish in New York a French taximeter motor cab service. He says he will visit Paris this month, purchase thirty cabs for a starter and have the service in operation in New York in the early autumn.

Making Acetylene Cylinders—The Acetylene Gas Illuminating Co., 105 Walker street, New York, has been capitalized at \$100,000 to manufacture small acetylene cylinders of Parisian style for motor car and other uses. It will be called the Stereo. The company also will make a new high candlepower acetylene incandescent burner for lamps. The incorporators of the company are Eugene Bournonville, ex-chief engineer of the Commercial Acetylene Co., and W. P. Thomey-Caval-

leris, president of the Acetylene Gas Illuminating Co., of New York. The factory is located at Jersey City, N. J.

Has Chicago Representation—The J. N. Willys Co., of Elmira, N. Y., has opened a Chicago office at 1303 Michigan avenue, R. P. Dowse having been placed in charge as manager.

Motor Shop Expanding—The Motor Shop, 317-319 North Broad street, Philadelphia, which handles the Stearns, Oldsmobile and Columbus electrics in that city, has been compelled by the rapid growth of its business to acquire the next-door property at No. 321.

Adds to Dragon Branch—The Dragon Automobile Co. will build a modern fireproof garage building in the rear of the present Boston Dragon salesroom on Massachusetts avenue. It will be ready for occupancy within 60 days. A well-equipped repair shop will be installed.

Quick Work—President Colt, of the Cleveland Motor Car Co., was at the St. Louis show last week and on Tuesday closed with the Van Auto Co. for the St. Louis agency. The next day he had a car on exhibition at the show, it having come from Cleveland. President Colt also closed with Carl W. Poole for Seattle and Tacoma.

Leavitt's Deal—J. W. Leavitt & Co., of San Francisco, write that they have disposed only of their Wayne interests in northern California to the Motor Car Agencies Co. "This is very far from that concern taking over the business of J. W. Leavitt & Co.," they write, "as we handle the Reo and Stoddard-Dayton, as well as a large line of bicycles, motors and supplies in this section."

Quaker Reorganization—The reorganization of the Martin & Hart Motor Co., Thomas agent in Philadelphia, is announced. The new concern is known as the United Motor Car Co., which will handle the Thomas Flyer and the Thomas Forty in Philadelphia. Aubrey H. Martin and Ernest R. Kelly, who were prominent in the Martin & Hart Motor Co., will be connected with the new concern in execu-

tive capacities. H. Allan Dawson is president of the new company and A. H. Dorsey, vice president and general manager.

In New Place—E. F. Jackson, formerly with Morgan & Wright, is now connected with the Goodyear Tire and Rubber Co.

Will Collect for Dealers—The New York Automobile Trade Association has appointed a committee to look up permanent headquarters and intends to establish a collection bureau in connection therewith.

Burning the Midnight Oil—The motor boom is now on in Philadelphia for fair, and many of the Gasoline Row establishments have found it necessary to remain open till 11 o'clock at night in order to keep pace with the demands of business.

Break Ground for Plant—The Fedders Mfg. Works of Buffalo have purchased a site in the black rock district and have broken ground for a new \$30,000 plant to be devoted to the manufacture of square tube radiators. The factory will be ready July 1, it is announced.

Baseball Fans in Motor Trade—A baseball league is in contemplation among the New York agencies and branches. Already matches have been scheduled between the Locomobile branch and Duerr's Royal Tourist agency and between the White branch and the Empire State agency, and the Craig-Toledo and the Queen forces.

Using a Manograph—The Frayer-Miller Motor Car Co. is using a manograph capable of testing four-cylinder engines. Each motor is tested by the manograph before it is placed in the chassis which gives a continuous photograph of the explosions of the engine, showing whether or not the ignition and mixture are right, whether the valves are properly timed and if the charge is firing at the proper moment.

Will Locate at Berwyn, Md.—The Carter Motor Car Co. has selected a site at Berwyn, Md., for its proposed new factory. A. Gary Carter, president of the company, says the cost of the plant and equipment approximately will be \$100,000 and that the estimated annual output will be 1,200 machines, representing a total value of more than \$4,000,000. About 100 men will be employed at first and 500 later on. The company will build three models at the start, after which it will turn out fire machines and utility vehicles.

Change in Columbia Agents—The most important trade event in Washington, D. C., since the first of the year was the closing of the local branch of the Electric Vehicle Co., known as the Washington Electric Vehicle and Transportation Co., and the placing of the agency for Columbia electric and gasoline cars with the Dupont Garage Co., which has a large garage at 2020 M street, N. W. The garage of the Washington Electric Vehicle and Transportation Co., known as the Panorama building, on Fifteenth street, will be used by the Dupont company for its commercial

service. In addition to the Columbia line, the Dupont company will also handle the Cleveland and Rambler.

Moves New York Offices—The Uncas Specialty Co. has changed its New York offices from 1555 to 1781 Broadway.

Harris Changes—Charles W. Harris, formerly with the Plana Rubber Co., has been appointed general manager of the American Cellular Tire Co., with headquarters in the New York Life building, Chicago.

Aldrich in New Place—R. D. Aldrich has resigned his position as manager of the New York branch of the Neverout Lamp Co., to become sales manager of the Twentieth Century Mfg. Co., New York.

Handling Walthams—The Concord Motor Car Co. has just been formed in Boston to handle the line of Waltham Orientals. J. A. Savell, well known in the bicycle game in the east, is at the head of the company.

Bolton Company Rents Store—The three spacious stores at 100, 102 and 104 Dolphin street, Baltimore, are now occupied as a garage and salesrooms by the Bolton Automobile Co., which has the agencies for the Ford and the Reo.

Moon Deal in New York—The Moon Motor Car Co., of New York, has been formed with D. D. Holmes as manager to handle the Moon. Half of the big store now occupied by the Aerocar company's branch at Broadway and Seventy-third street has been leased for headquarters.

Thomas Foreign Expert—Michael Amide Longeron is superintending the remodeling of the Thomas Vanderbilt cup racers in addition to his other work at the Buffalo factory. Longeron constructed the cars originally and his experience in building racing machines dates back to 1895 when he built the cars that won the Paris-Berlin, Paris-Bordeaux and Paris-Toulouse as well as the tour of France. He also built the Bennett cup winners in 1904 and 1905.

Vacation for Briscoe—Benjamin Briscoe, chairman of the committee of management of the American Motor Car Manufacturers' Association, has gone to California for a rest and incidentally to look the field over for a factory for Maxwell cars on the coast. He sailed last Thursday on the steamer Proteus for New Orleans and from there will go to Los Angeles, afterwards visiting San Francisco, Portland, Seattle and Salt Lake City. Mrs. Briscoe accompanies him.

Will Accommodate Patrons—The Foss-Hughes Motor Car Co., which handles the Pierce Arrow, Cadillac and Baker electric cars in Philadelphia, is rushing work on its new garage and repair shop at 221-223 North Watts street, a few feet north of the rear entrance to the salesrooms at Broad and Race streets. The company is going to try the experiment of a club garage, extending to local owners of Pierce Arrow, Cadillac and Baker machines the free use of the accommodations for lim-



NEW WINTON HOME IN PITTSBURG, FINISHED IN TIME FOR SHOW

ited periods—while at the theater, lunch, etc.—and cleaning the cars and making minor repairs when necessary.

Big Reo Shipment—Thirty 18-20-horsepower Reo touring cars recently were received in one shipment by the New York branch of R. M. Owen & Co.

New in Boston—The latest agency to establish itself in Boston is that of the Atlas car. The new company has opened a salesroom on Massachusetts avenue between Boylston street and Commonwealth avenue. J. W. Crowell is the manager.

Making Tops and Gears—The Schubert Brothers Gear Co., of Oneida, N. Y., has added another branch to its business in the manufacture of bodies and gears. A designer for this class of work has been secured and has already entered upon his duties, and other experienced workmen have been engaged.

Will Handle Michelins—The Franco-American Auto and Supply Co., of Chicago, announces the appointment of the following agents as distributors of Michelin tires, and the territory covered by each: Curtin & Williams Co., Columbus, O.; Coughlin & Davis, Cincinnati, O.; H. B. Groves Co., Sioux City, Ia.; Norris Automobile Co., Saginaw, Mich.; Kirk Bros. Motor Car Co., Toledo, O.; Fawkes Automobile Co., St. Paul and Minneapolis, Minn.; W. C. Anderson, Cleveland, O., and radius of 50 miles; Western Auto Supply Co., Cedar Rapids and eastern Iowa.

Pardee Replaces John—Fred J. Pardee, of Pardee & Canary of Chicago, has been appointed sales manager of the St. Louis Car Co., manufacturer of the American Mors, succeeding George C. John. Mr. Pardee will resign as president of the Chicago concern, but he will remain a director and retain his interest in the enterprise. He will divide his time equally between Chicago and St. Louis. Mr. Pardee is one of the oldest dealers in Chicago and one of the most prominent. He handled the Packard for years and last year the concern he was president of was known as the Pardee-Hamill-Johnston Co. Starting

this season it became Pardee & Canary, handling the American Mors, Renault, American, Mors and Babcock electric.

Henshaw Moves—C. S. Henshaw has moved into his new headquarters on Massachusetts avenue at the corner of Newberry street, Boston.

New Concern Starts—The Williamsport Automobile Exchange of Williamsport, Pa., has turned out the first one of the line of cars it will manufacture. It is a roadster and will be called the Imperial.

In a Big Place—The Toledo Motor Car Co., of Toledo, has opened a new garage in the Coliseum, the large hall in which was held the motor show, which is located in the heart of the city's residence section.

Big Rainier Garage—The Rainier Automobile Co. will have one of the best equipped garages in Pittsburg after the show. It will be at Seventh and Bedford avenues, close to Grant boulevard and the business center.

McDuffee's New Store—The new Milwaukee establishment of the McDuffee Automobile Co. will consist of a two-story solid brick structure on Eighth street, just south of Grand avenue. The salesroom will extend back about 35 feet and the garage proper will be 70 by 85 feet, cemented and slightly sloping toward the center. A feature of the garage will be lockers for each car. The repair shop will extend across the alley under the building. The building will be ready for occupancy by May 1, it is expected.

Will Make Brown Plugs—The Progressive Mfg. Co. of Torrington, Conn., has secured the exclusive right to manufacture and sell the Brown separable lock spark plug and the Brown regular plug. Features of this plug are that it can be easily taken apart, cleaned and assembled. The porcelain can be removed without disturbing any other part of the plug, the instant release of the porcelain being secured by a slight turn of the handle. There are no terminals to disconnect as the porcelain does not turn in releasing.



LEGAL LIGHTS AND SIDE LIGHTS



BADGERS BUSY EDUCATING

Educating legislators in motorism is
 a more important proposition, but it was done
 with some remarkably good results a few
 days ago when August Jones and Frank
 Koesler, a 17-year-old driver did consid-
 erable work to allay possible prejudice and
 misconception of the motor speeding ques-
 tion in the lobby of the Wisconsin legis-
 lature at Madison. Through the efforts of
 the Milwaukee Automobile Club and
 James T. Drought, Jonas' Peerless car,
 equipped with speedometers, gave a prac-
 tical demonstration to the legislators of
 what the various speeds from 6 to 40 miles
 an hour really are. The ease with which a
 motor can be stopped and controlled was
 quite a revelation to the majority of the
 members. The law makers courteously
 consented to be taken for 30 to 45-minute
 spins for practical demonstrations about
 the city of Madison and suburbs and were
 then driven to the members' managers to escape
 the vigilance of the motor lobby. James
 T. Drought, who planned and executed this
 unique campaign, said: "Our proposition
 is to compel both and can be summed
 up briefly in the following words: The
 slightest violation to be allowed to the
 careful and considerate driver of a motor
 is consistent with public safety, coupled
 with the stringent provision providing
 for a heavy fine and jail sentence
 for the reckless driver. We believe
 the Wisconsin law in its present form
 should have added to it a provision to
 punish the reckless driver by fine and im-
 prisonment. The members of the legisla-
 ture will be fair with us. We are
 honest and earnest in our endeavor to
 demonstrate to them why the present
 speed limit of 12 miles in cities and 20
 miles in the country should not be re-
 duced. On the other hand, we have pro-
 posed to them an addition by way of
 amendment to the present law, which will
 not only give to the authorities the power
 to arrest, fine and imprison the reckless
 fellow, who is creating all the trouble,
 but which if enacted into law will put him
 out of business in Wisconsin for all time
 to come. I believe from the many per-
 sonal expressions of good will from legis-
 lators that the careful driver will have
 nothing to fear."

MUST DO THEIR DUTY

Road supervisors in Pennsylvania who persistently neglect their duties will go to jail, says a bill signed by Governor Stuart. The bill provides that when a road supervisor—any township officer, in fact—fails to do the work for which he was elected or appointed, the county court may, on petition of twenty-five citizens of the district, real estate owners, and after

the officer has had a hearing, remove him from office and appoint another in his place. Road supervisors who fail to supervise will henceforth be a rarity in the

FACE AT GLEN ECHO

The warfare between the motorists of Washington, D. C., and the authorities of Glen Echo, Md., continues unabated, and fuel is constantly being added to the fire by the actions of the redoubtable town marshal, Charles P. Collins. With a view to smoothing out the Glen Echo tangle, a meeting of the Automobile Club of Washington was held recently. The call for the meeting was couched in the following language: "You are familiar no doubt with the litigation last year between the Automobileists' Protective Association and the Glen Echo authorities, which resulted unfavorably to the motorists. Recently a friendly understanding was reached between the town authorities and this club whereby the speed limit of 6 miles per hour will be raised to 12 miles on April 1, and further privileges will be granted motorists provided they observe the law. The experience of motor clubs in other cities has clearly shown that punishing motorists by local ordinances only increases drastic legislation and prevents law-abiding motorists fully enjoying the sport. While on the other hand co-operation with the local authorities has always resulted in more lenient legislation." At the meeting the following resolution, drawn by W. S. Duvall, former president of the club, and Colonel M. A. Winter was unanimously adopted: That the Automobile Club of Washington desires to go on record as being in favor of indorsing the enforcement of the motor car laws of Maryland in so far as they are reasonably and properly enforced. Mr. Duvall made a short speech about the methods of Town Marshal Collins, saying among other things: "Unnecessary display of a revolver in arresting motorists is not conducive to a spirit of harmony. Collins has repeatedly exceeded his authority, his manner is most offensive, and he is clearly not the type of a man who should be given the authority he possesses. In the adoption of a resolution it should be clearly understood that the club does not give its approval to Collins. If transpires that Collins' appointment expires on May 1 and already there is an active campaign being waged to prevent his reappointment. While he is appointed by the mayor of Glen Echo, the appointment must be confirmed by the town council. Efforts will be made to secure the election of councilmen who will not sanction the action of Mayor Garrett should his desire to reappoint Collins prevail."

HOOSIERS ARE FOOLED

People, however, sell their own machine in another foreign Indian name just copy into a realization of the fact that the recent legislation which promised there would be no obnoxious legislation so far as motors were concerned played a huge joke on them. The joke, it seems, is the one motor law that was passed and some of its features, while amusing, are designed to be exceedingly expensive for the man of motors. It seems Representative Trump was sent to the house of representatives with a promise to get a motor bill through. He attempted several all of which failed. The last one he introduced, after being amended by the committee, slipped through during the closing days, practically unnoticed. It was generally understood the law required larger numbers to be carried on both front and rear of cars, entailing an expense of about \$5. It is learned now that not only will larger numbers be required but they will have to be new ones, due to an elaborate numbering of systems designed by Representative Trump. The old way was to start with No. 1, now the new way is a series of 100 numbers each. For instance, the first car registered will be assigned No. 1. The first 100 will be in the A series. Series No. 2 will begin with B and continue to B 100, continuing through until the alphabet of Series No. 27 will start with A 1, continuing through the alphabet as the first 26 series of the Series No. 27 will start with A 1. Just what the addition gives such a system has not been discovered. There is one feature that has hitherto escaped notice also, even when motorists are rejoicing at it is one that prohibits cities and towns from assessing an annual license or cess. For many years Indianapolis has had an annual license of \$3.00. Owners in New Albany have had to pay \$10 a year, while horse-drawn vehicles in the latter city have paid \$1.50 a year. The new law goes into effect some time this month, when the governor issues a proclamation declaring all laws to be in effect.

TEKANS BECOME SCARED

The city council of Victoria, Tex., has passed a motor ordinance through its first reading, limiting the speed of motor cars and through the city to a maximum rate of 15 miles an hour, and when turning corners at a speed of 10 miles per hour, the proper signal to be given before turning left or right. There are six cars in Victoria now, and a number of complaints have been registered against the high and dangerous speed at which they are being propelled in the city. Victoria is only one of the cities in the Lone Star state to take up the motor question. Several others are also considering ordinances.

ALUMINUM THE FEATHERWEIGHT METAL



ALUMINUM, the feather-weight metal, occupies a place in motor car construction impossible to fill with other metals, due primarily to its light weight and strength. The present market price is approximately 40 cents a pound, an advance of 10 cents having been made within the last few weeks. Previous to this big jump there was a recent advance last fall. Aluminum has a specific gravity of 2.8, meaning that a cubic inch of aluminum or any other metal is 2.8 times as heavy as an equal volume of water at a temperature of 4 degrees Celsius. Compared with this light weight cast iron has a specific gravity of 7.3 or exactly three times as heavy as aluminum, while lead shows a specific gravity of 11.37, being four and one-half times that of aluminum.

The first practical evidence of the properties of aluminum was given by a French chemist named Baron about 1760, but little was done with the metal beyond experiments until 1824, when a German chemist, Wöhler, discovered aluminum by the name of Wöhler discovered aluminum in its true sense; and in that same year a French chemist named Deville determined its true properties and really became the founder of the aluminum industry. In evidence of his researches Deville ordered a medal of aluminum to be made and presented it to Napoleon III, which induced the French emperor at that time to order further experiments at his own expense. Although not very successful it led to the French government offering the use of its laboratory at Javel to Deville to continue the research. Metal made at the Javel laboratory was exhibited at the Paris exposition in 1855. It is reported that the first article made of aluminum was a baby rattle which was presented to the infant prince imperial.

In 1855, at Rouen, France, the first company was organized to manufacture aluminum, but the price at which it had to be sold, on account of the cost of producing, made it prohibitive, and the company discontinued business a year later. A French man named Martin next headed a company and established a works at Amiens, France, which operated successfully and sold the metal at 32 cents per pound. Deville kept on working in a quiet way, perfecting details for the manufacture of aluminum commercially, and finally in connection with M. Rousseau, reduced the price to 25 cents per ounce. Up to 1888, the Deville process was recognized in France, England, Germany and the United States as the only successful method for the manufacture of aluminum; and it is safe to say that the Deville idea was the

starting point to a new method, which was brought to light by Charles M. Hall of Oberlin, O., patents having been granted him on the method in 1889, thus bringing about another revolution in the aluminum industry.

The Hall patents were taken up by the Pittsburgh Reduction Co. It is interesting to know that this company produced about 100 lbs. of aluminum per day during 1890 and sold it at \$4.50 per pound. In 1891 it increased its capacity to 400 pounds per day and sold it at \$3 per pound. Since 1890 rapid strides have been made in the manufacture of aluminum. With the advent of the motor car manufacturing industry in the United States, the commercial value of aluminum became apparent, although little was known of its physical properties, but the fact that aluminum had a specific gravity of one to three of the heavier metals influenced engineers to follow its progress, with a view of using it in motor car construction, reducing weight to economize power and to save tires.

As early as 1900 the Light Mfg. Co., of Pottstown, Pa., realized the possibilities of this new metal commercially and set out at once to develop aluminum alloys especially adapted to motor cars and motor boat construction. So well did it succeed in getting the necessary physical properties that it secured a large contract for aluminum castings from the de Dion-Bouton Motor Co., which was one of the first to engage in the manufacture of gasoline motor cars on a large scale in the United States.

It is a well-established fact that high tensile strength is not to be found in an aluminum casting. When the tensile goes up the elongation comes down, and when the elongation goes up the tensile comes down. The difference of elongation is not to be found in an aluminum casting.

Sample No.	10,686
Material	Aluminum
Dimensions	10 in.
Area	1 in.
Reduction of area	1 in.
Reduction of area	1 in.
Elastic limit	10,000 lbs.
E. S. per sq. in.	10,000 lbs.
Maximum strength	17,000 lbs.
E. S. per sq. in.	17,000 lbs.
Elongation by inches	0.2-0.3
Elongation in 4 in.	2.75 per cent
Fracture	Granular
Remarks	Specific gravity: 2.99

findings made by the engineering department of the Hall, Mfg. and Foundry Co. The company allows aluminum wherein it can produce the greatest tensile strength to the square inch and bulk for bulk. The weight of bronze. The subject of shrinkage comes up in every pattern shop, and while there can be no fixed rule, the company invariably suggests a shrinkage of from 1/16 to 1/8 inch.

Aluminum is obtained from clay in the form of bauxite, which is an impure aluminum hydrate with such impurities as oxides of iron and some phosphates in it. Bauxite occurs in clay-like deposits of which brown or reddish brown color. It gets its name from Beauz, in France, where it was originally found. At present it is obtained largely in America, Scotland and France, and is the principal ore from which aluminum is produced. Bauxite contains aluminum, iron and iron in the form of hydrates. The bauxite or bauxite compound is melted in a bath through which passes a powerful electric current, which by the well-known principle of electrolysis decomposes the aluminum, liberating the pure aluminum, which in its molten state is heavier than the other products in the bath and so sinks to the bottom, from where it is drained off, as fresh supplies of raw material are added. Nearly all aluminum used is manufactured by this electrolytic process and the annual output for all countries combined was 5 years ago slightly in excess of 5,000 tons.

In the Hall process of manufacture the baths used are oblong in shape and are lined with sheet iron with a heavy carbon to redman ydrow a 25 2500000 00 000 lining. The electric current passes into each bath or pot by carbon electrodes, each 3 inches in diameter and 18 inches long suspended from a copper carrier bar. The running longitudinally over the bath. The pots are worked in series and the drop of the electric current is 5 volts. Each pot absorbs 65 horsepower and produces 112 pounds of aluminum every 24 hours. The electrolyte is kept at the necessary degree of fluidity—850 degrees to 900 degrees Centigrade—by the action of the current and about one-half of the energy of the electricity is required for this purpose, the other half performing the actual electrolytic dissociation of alumina into the metal and oxygen. Alumina is added in the pots at regular intervals as that dissolved in the electrolyte is decomposed, and the surface of the electrolyte is kept covered with powdered coke to prevent oxidation. The purity of the metal obtained by the electrolytic process has steadily improved and the product now placed on the market contains on an average 99.6 per cent pure aluminum.



KANSAS CITY 3-TON TRUCK WITH CHROME NICKEL STEEL AND HESS-BRIGHT BEARINGS THROUGHOUT

“**3-TON** truck only.” This epitomizes the present plans of the Kansas City Motor Car Co., Kansas City, Mo. Concentration is the unwritten law read on every particle of raw material brought into the shop and on every finished portion of its 3-ton truck. This policy comes as a marked reversion of the guiding principles of the concern a little over a year ago when its factory energies were divided among two-cylinder pleasure cars, six-cylinder pleasure cars, two-cylinder delivery wagons and four-cylinder opposed motored heavy trucks. The new factory law concentrates the attention of the entire factory on one machine which, judging from materials used and engineering principles involved, should unhesitatingly be accepted as a worthy member of the American heavy-weight fraternity. At this writing Motor Age is unable to express an opinion as to the performance of the car, or as to its durability, having neither seen it nor read of its prowess: the judgments are based solely upon metal and design as seen by the observer.

As a 3-ton truck it fills a place in city transportation in need of assistance. Its load-carrying capacity approaches the needs of many manufacturers and wholesalers and the dangers of injury from overloading are not so great as with the lighter load machines. Apart from this selection the merits of the truck are design and material. The quest for metal led the maker to the best products of American

steel as well as to the factories of Krupp at Essen, Germany, where the Krupp special motor car steel E. F. 60.0—chrome nickel steel—was secured for the front and rear axles, these members being of I-beam section, the front one 2¾ inches deep and with top and bottom lips 1¾ inches wide, whereas with the rear stationary axle the vertical depth is 3¼ inches and the lip width 2½ inches. The forward axle is

made with a central inverted arch and Elliott jaws for carrying the steering wheel spindles. The rear axle is a Mercedes design, slightly dropped between the wheel and the spring seatings. But the metal quest went further. Frames are from the Bethlehem plant, and consist of the company's chrome nickel steel channel construction made with side members 7 inches deep in the center, 48 inches apart at the rear but narrowed to 36 inches alongside of the motor to augment the turning angle and eliminate a subframe for motor and gear-box support. The extreme frame length is 168 inches, being 4 feet 6 inches in excess of the 114-inch wheelbase. Tying these side pieces together are five channel cross members strengthened by large gusset plates used in pairs. Transmission gears and shafts in the three-speed sliding gear-set are made from a French steel described as mangano silicon steel which insures for the gears a claimed tensile strength of 240,000 pounds per square inch. The motor crankshaft is a hand forging of nickel steel; the camshafts with their integral cams are nickel steel drop forgings; piston rings are hammered members, and the steering gear's worm and sector are of chrome nickel steel composition.

With the material aspect of the car a settled quantity the bearing problem resolved itself into the general adoption of Hess-Bright ball races, these being used in no less than twenty-two places throughout the machine, among which may be noted double

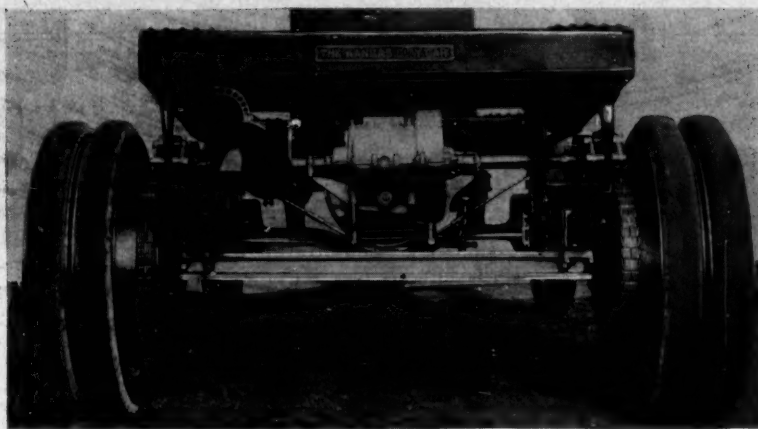


KANSAS CITY TRUCK WITH KRUPP CHROME NICKEL AXLES

aces for all four road wheels, thrust bearings in the steering knuckles, mainshaft of gearset, differential set, jackshaft drive axles, steering gears, clutch and motor fan. This comes as an innovation in American-built trucks but follows the trend of design abroad in which English makers, the accepted leaders in heavy truck construction, use this type of bearing generally for the road wheels, transmission, jackshaft and steering knuckles and to exemplify

this reference is asked to the general resume of the Olympia commercial car show in last week's Motor Age. Makers of these bearings refuse to supply them until they are given the load they are to carry and then they dictate what size of bearings shall be used. This commendable precaution is an excellent safety valve to the promiscuous use of this bearing in commercial machines. Where plain bearings are used as in the crankshaft and camshafts of the motor and the counter and reverseshfts of gearset the bearing metal used is plain bronze bushings or bronze bushing lined with Fahrig metal.

Leaving the metal and bearing phases of this truck, that of general design presents itself. In this the truck exhibits the latest tendencies followed in foreign truck construction and duplicates most of the points found in the American-built touring car. The motor has its cylinders in pairs with valves disposed oppositely. The igniting spark comes from either a high-tension, gear-driven magneto or storage cells, these forming two distinct systems, both of which can be used at once when necessity invites. Lubrication is by mechanical principles to all parts. In

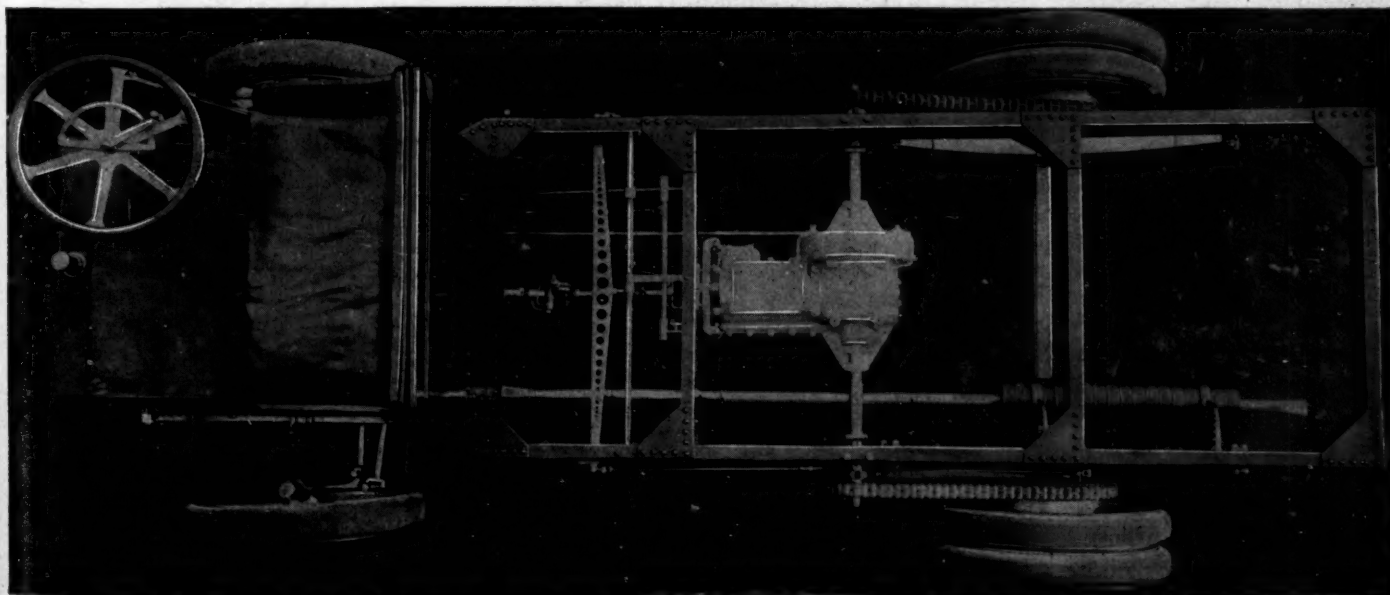


TRUSS SUPPORT FOR KANSAS CITY GEARBOX

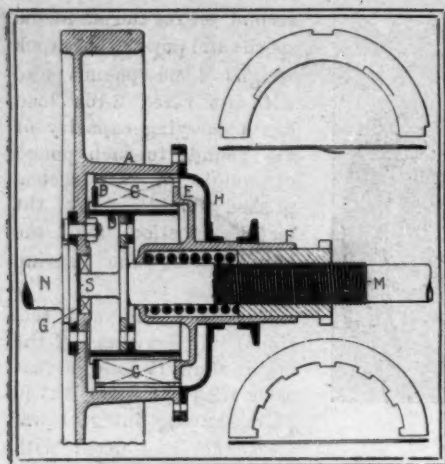
the flywheel is a fifty-disk clutch operating in oil. Between this clutch and the gearbox is a short driveshaft with universal couplings to facilitate demounting of the clutch. Added to these designs is that of carrying the gearbox on a three-point suspension. After this comes something new in this country—the transmission of power from the jackshaft sprockets to the road wheels through Morse silent chains; this comes also as an echo of the growing adoption of the Hans Renold silent chain in Great Britain for this same use. Using twin rubber tires on the rear wheels is not new, or is the use of a standard inclined steering column, or driver's seat mounted over the motor thereby leaving a load-carrying platform 10 feet long behind the driver's seat. The adoption of a governor to maintain a speed of 1,000 revolutions per minute of the crankshaft which prohibits the truck traveling at more than a maximum speed of 10 miles per hour should conduce to the longevity of the machine. Valuable also in connection with the life of the motor is a low hot compression of but 62 pounds. To this might be added the use of a double-jet carbureter permitting the use of one jet for starting the slow motor speeds and

then the introduction of the second jet for the maximum speeds and power. The truck weighs 4,000 pounds and with its rated 3-ton load has a carrying capacity of $1\frac{1}{2}$ pounds to each pound of weight, a fact accomplished doubtless by the metal selection and the handling of the bearing problem.

The side and end sectional line drawings of the motor show it follows that style with cylinders cast in pairs, having integral waterjackets and fitted with mechanical valves all located in the bottoms, of integral ports on opposite sides, intakes on the right side and exhausts on the left. This disposition calls for the use of two camshafts carried entirely in the upper part of the crankcase, the walls of which are given slight expansions to accommodate the shafts. Horsepower rating is not given, but the cylinder bore and stroke are $4\frac{1}{4}$ and 5 inches. Water jackets are made particularly roomy, as seen by the capacious spaces around the valve ports, although the jackets surrounding the walls do not extend very low. Valve action is conventional in that the cams are integral with their shafts and the valve lifter rods work in long guides set into the top of the crankcase, held therein by yokes, one for each two guides. The bottom of the lifter rods carry rollers for bearing on the cams. Enclosed in the guides are springs for holding the rollers in constant contact with the cams. Valves and stems are formed integrally, the head being slightly convex on top and the union of the head and stem being the heavily reinforced portion of the stem. The stems work in guides in the floors of the ports and the customary springs bear upon the ends of



KANSAS CITY 3-TON TRUCK WITH THREE-PART GEARBOX SUPPORT AND MORSE SILENT CHAIN DRIVE



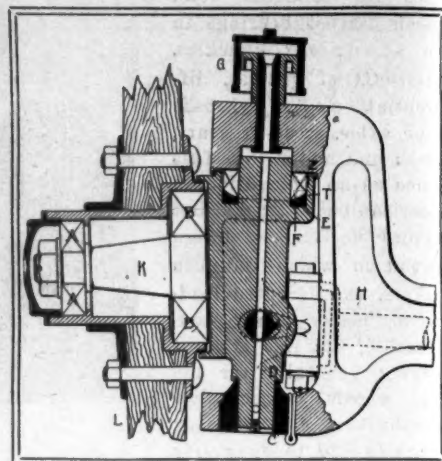
KANSAS CITY CLUTCH SECTION

these collars on these guides and upon pin-retained washers carried on the stems. Valve removal is through caps over the ports. These are retained by yoke, a bit of French practice. Pistons are of the straight side flat top variety carrying four compression rings well above the wrist pin. Connecting rods of H cross section are not split at the upper ends, but carry marine type of caps on the lower ends, retained by belts with hex nuts and cotter pins. The lower portion of the crankcase, made to serve as an oil well, carries on the exhaust side angular inspection plates through which access to the nuts holding the connecting rods caps can be attained without removing the base portion or getting directly under the car. While the crankcase is conventional in that it carries the five bearings of the hand forged crankshaft yet it differs from the accepted style in that it incorporates with it an integral apron, filling the space between the supporting arms. These arms are absent in fact and this apron effect continues outward to the mainframe pieces, which take the motor support direct. The exhaust manifold is a one-piece casting with eight longitudinal fooling flutes. Half-time gears at the forward end are completely enclosed. In controlling the motor the spark is retarded for starting, when compression reliefs are used but at other times the spark is kept at a fixed point. Water pipes are made $1\frac{1}{4}$ inches in diameter and circulation is provoked by gear-driven centrifugal pump. A double return pipe from the cylinder to the radiator is used.

The multiple disk clutch is made with fifty disks, one set of eighteen gauge steel disks with a $6\frac{1}{2}$ -inch diameter. Alternated with these is a set of sixteen gauge bronze disks with toothed peripheries for attachment to the internally notched drum A on the rear face of the flywheel, whereas the steel disks attach at their inner edges to the disk carrier B, which is bolted to a flange integral with the shaft M. This shaft M has a Hess-Bright ball bearing G within the flywheel and an end thrust plate S between it and the crankshaft flange. The fifty plates occupy a

position indicated by the letter C, not shown in the position. The disks rest against a thrust plate D and are engaged through the spring action upon the clutch push sleeve E with its integral flange E. The clutch disks are protected from dust by cover plate H. In the clutch illustration is seen at the upper right one of the steel plates as well as a section of a plate showing how the center part of the disk is cut and the metal bent to assist in disengagement. In the lower right appears one of the bronze disks, with its notched periphery for attachment to the flywheel drum. Beneath it is a cross section showing it not to be split and bent out to assist disengagement.

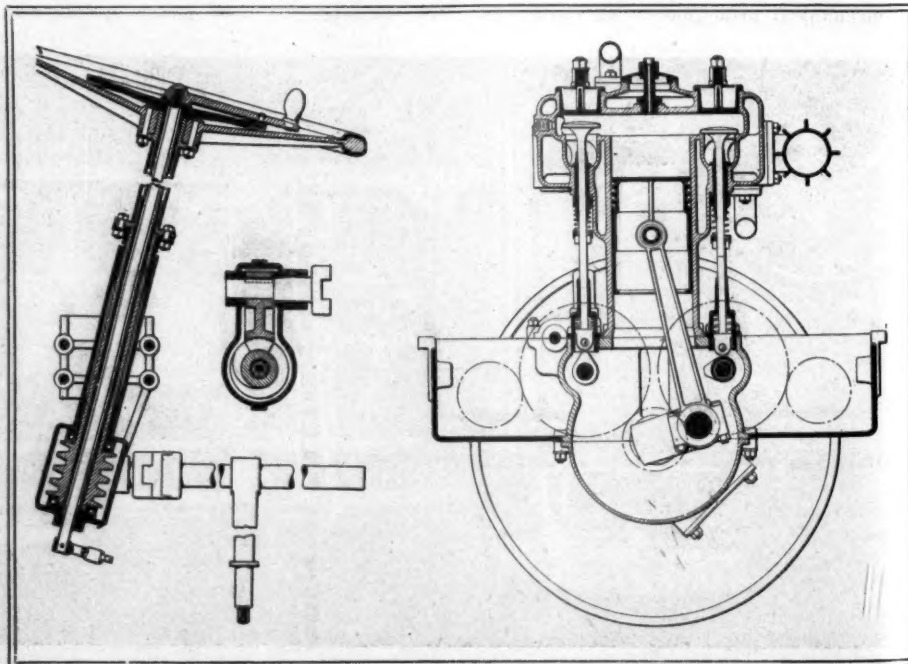
Speed variations accomplished by single lever control through a progressive sliding gearset are 1 8-10 miles per hour for low speed, 5 miles for intermediate, 10 miles for direct drive and 1 1-10 miles for reverse. The gearset is enclosed in an aluminum housing peculiarly supported at three points, one at the front end and two through the housing sleeves for the jackshaft at the sidepieces of the frame, where ball and socket supports are used. The plan illustration of the chassis shows how the gearset is only supported at its front end to a crosspiece of the frame and the two other points through the jackshaft sleeves, the principle being the same as the supporting of a floating differential housing in a shaft driven axle. The jackshaft drive axles are of the floating style, their sleeves taking all of the load. The front support of the gearset consists in a bracket secured to the cross piece of the frame. Supported on this bracket is a cross yoke, seen in the illustration immediately in rear of the frame cross piece and extending across the front of the gearbox. The gearbox is suitably attached to this yoke. To assist the jackshaft sleeve in carrying the weight of the rear



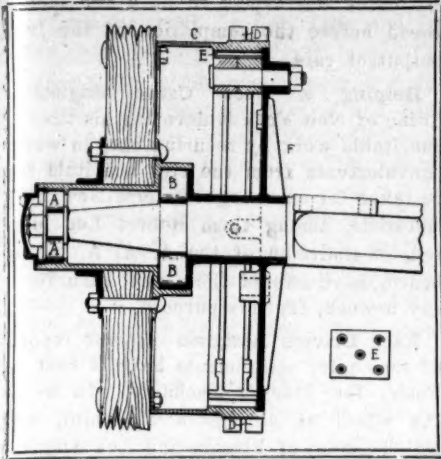
KANSAS CITY FRONT AXLE

end of the gearbox a truss support is used which can be seen in the rear view of the chassis. This trussing is a couple of rods with turnbuckle adjustment, angling from the ends of the jackshaft sleeves to the base of the gearbox where they unite with a bridge seating on which the gearbox rests. To further strengthen the gearbox a heavy webbing is resorted to between the sides of the case and the lateral extensions for receiving the jackshaft sleeves. Internally the gearbox is conventional with all of those in which the main and countershaft are in the same vertical plane. The gearbox is a two-part aluminum casting divided horizontally. In the upper half are two inspection caps. Enclosed with the gearset is the pedal brake which is a cast iron to steel expanding member operating in oil. The brake has a drum 14 inches in diameter and $2\frac{3}{4}$ inches wide.

Nothing indicates better the attempt at conventional motor car construction in this 3-ton truck than does the use of Hess-Bright ball bearings for carrying the front



STEERING GEAR AND SECTION OF MOTOR IN KANSAS CITY TRUCK



KANSAS CITY TRUCK REAR AXLE

and rear road wheels and as thrust bearings in the steering knuckles. The vertical section of the front axle with hub and steering spindle shows the large Elliott ending H of the I-beam axle and the heavy spindle K for taking the weight of the front wheel, the spokes of which are indicated at L. Two races of balls carry the wheel, the inner race B of large diameter and well to the inner side of the spoke and the smaller outer race A in the usual place. The lower bearing of the steering knuckle at C has a peculiar coned top D where the lower end of the spindle axle bears upon it, this overhanging part of D excluding the dust. At the top Hess-Bright balls are used, their presence indicated at F and E, marking the peculiar thrust collar that they bear upon. Care is taken as indicated at Z to counter-sink the top of the flange T, enclosing the bearing into the top arm of the jaw on the axle H.

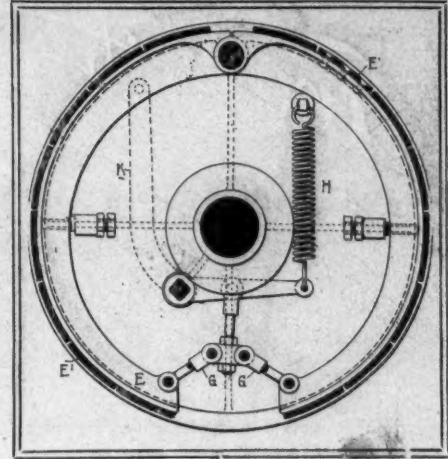
Construction in the rear wheels is similar in that Hess-Bright races A and B support the road wheels on the stationary

axle. Bolted to the wheel spokes is the sprocket C with double row of teeth D for the Morse silent chains used in transmission in place of roller chains. The brake is, as seen in the side view and expanding members E, hinged to a carrier at their top ends and expanded through the toggle arrangement G. Adjustments are through set screws and spring H prevents dragging of the shoes and the arm K serves for connection with the brake equalizer. The expanding shoes are segment-covered pieces E1, each segment measuring 3 inches by 2½ inches and held to the shoe by five rivets as indicated. The brake drum is 18¼ inches in diameter and 2½ inches wide and a long equalizer working through slots in the side members of the frame, recalls the practice followed by the Peerless and Pierce people.

ACTIVITY IN PHILADELPHIA

On April 1 there was launched in Philadelphia the Auto Express and Trucking Co., a concern which will make a specialty of the collection and delivery of heavy freight and express. The service will begin with two trucks—a 2-tonner and a 3-tonner—the product of the Reliance Motor Car Co., and will be increased as the growth of business requires. These vehicles can travel at the maximum speed allowed by the local ordinance and each of them, it has been calculated, can do the work of three teams capable of handling goods of equal weight. Recently experiments were made as to the running time under actual service conditions, and the result was so satisfactory that a schedule of tariffs has been decided upon which will be at least 33⅓ per cent less than the rates now charged for similar work by the regular local express companies.

With a promptitude that betokens ultimate success the Auto Transit Co. of Philadelphia on Thursday last caused to be



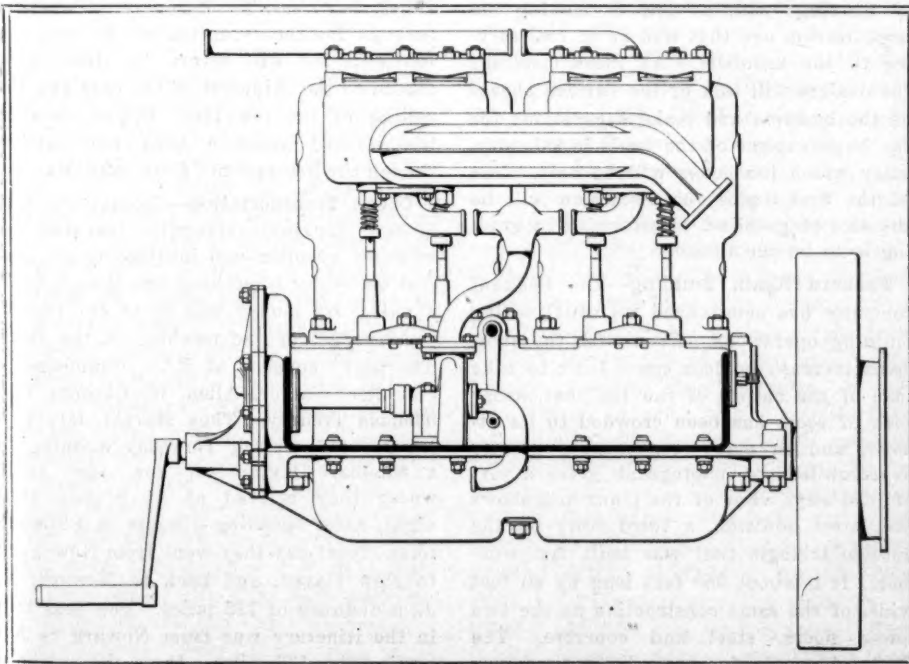
KANSAS CITY TRUCK BRAKE

reintroduced into council its ordinance for permission to operate a line of motor buses on the streets of the Quaker City, which had been side-tracked at the eleventh hour in the last council meeting through the opposition of the local traction people. Mr. McAleer introduced the measure, and the fight will be kept up until the bill becomes a law, failing which President Berg of the Auto Transit Co. insists he will begin operations under the clause of the constitution of Pennsylvania which gives to citizens the free use of the streets of any city in the commonwealth, providing the local conditions regarding the payment of license fees are complied with.

The Trolley Electric Vehicle Co., also of Philadelphia, has been experimenting with a motor trolley electric baggage truck on the streets recently. It having been rumored that the Rapid Transit Co. was back of the project. The Trolley Electric Vehicle Co. denies that such is the case, pointing to the fact that the local traction company has barely enough power to operate its own cars. Secretary-Treasurer Russell Thayer, Jr., the patentee, is authority for the statement that the vehicle is designed for use in such cities as Buffalo and Pittsburg, where the trolley lines have more power than they need and where wide streets are the rule.

MUNICIPAL CARS FOR HOOSIERS

Indianapolis has taken its first step towards motor cars for municipal purposes, and which action is understood to be a part of a general plan for introducing motor cars in all departments of city work. The scheme has been contemplated for some time and since Mayor Charles A. Bookwalter is interested to a certain extent in motor car manufacturing and is an earnest advocate of the car, it is likely the plan will be carried through. Cars purchased this week have included two for the police department and one for the city civil engineer. Later, it is understood, a car will be purchased for the chief of the fire department and motor cars will replace the horse-drawn vehicles used in the engineering department.



EXHAUST SIDE OF KANSAS CITY TRUCK MOTOR



VIEW OF THE PACKARD FACTORY AS IT IS TODAY

Tour Postponed—The Automobile Club of America has decided to postpone its proposed tour to the Jamestown exposition until autumn.

Quit Ventnor Beach—It is reported that Atlantic City straightway race meet promoters will abandon in future all attempts to run meets on the beach at Ventnor, and in place will use a 4-mile stretch on the boulevard, running from Camden to the seashore capital.

Exports and Imports—Import and export figures received by the American Motor Car Manufacturers' Association show sixty-two foreign cars of the total valuation of \$203,106 came into this country in February, and 831 cars of the total valuation of \$2,938,893 for the 8 months ending with February. The exports for February were 213 cars, valued at \$358,309, and for the 8 months ending with February 1,582 cars, valued at \$2,471,839.

Getting Busy—The City and Country Club, a proprietary organization, has opened temporary headquarters at the Empire hotel, New York, and is making announcement of most ambitious plans. Three club houses are projected. One is said to have been obtained at Lake Hopatcong, N. J., and another is being sought on Long Island. To these will be added a city club house. It is reported that contracts have been signed for the construction of a club garage to be run on the corporation plan.

Seattlers Organize—A preliminary meeting was held in Seattle, Wash., of dealers and owners, at which steps were taken to form an association, the nature and scope of which is yet to be decided upon. In all probability it will be general in its character. The following temporary officers were chosen: President, C. Z. Salling; vice president, F. A. Mitchell; treasurer, H. F. Grant; secretary, F. A. Wing. The need of an association has long been felt. Seattle is the principal motor city on Puget sound. The club will show an early activity by promoting races at the Meadows in May, and probably a second meet

in the fall. Everything will be done to promote good roads. In all probability early plans will be laid for a show next year.

Chicago Competitions—The Chicago Automobile Trade Association decided Monday night to turn over to the Chicago Motor Club the promotion of the local fixtures, the reliability run, hill-climb and economy test, that the dealers ran themselves last year. The motor club will at once set to work to arrange its dates.

Sounds Like a Dream—A plan to construct a motor track from Buffalo to New York city is being exploited by George P. Price, of Lyons, N. Y. The track would be 30 feet above the ground and would be built over roadways within walls of concrete. According to the plans there would be many arches to serve as barns, storehouses and offices for the company that is to operate the business.

On the Right Lines—Members of the Automobile Dealers' Association of Maryland are planning to hold a series of weekly meetings with a view of making the organization one that will be of real service to the members. At these meetings the dealers will talk of the various phases of the business and make suggestions for the improvement of the trade in this city, after which luncheons will be held. One of the first topics for discussion will be the sale of gasoline. Uniformity in grading is to be one theme.

Packard Again Building—The Packard company has commenced its usual spring building operations. Even with the enormous increase in floor space built to take care of the output of the 1907 car, every inch of room has been crowded to its utmost, and in many departments greatly overcrowded. A photograph gives a sort of bird's-eye view of the plant and shows the latest addition, a third story on the outside triangle that was built last summer. It is about 950 feet long by 60 feet wide, of the same construction as the two lower floors, steel and concrete. The Packard people for some little time now

have been ahead on their schedule delivery dates and expect to be a full month ahead before the completion of the 1907 output of cars.

Helping a Good Cause—Magistrate Crane of New York is devoting his time to charitable work by securing cars in which convalescents from the city hospitals can be taken for an airing. Several New York motorists, among them Robert Lee Morrell, ex-chairman of the A. A. A. racing board, have offered their cars, each for a day a week, for this purpose.

Race Drivers Assigned—Recent reports of race pilot assignments have it that Al Poole, Joe Tracy's mechanic, will be at the wheel of an Isotta Fraschini, and Ralph Owen, of Florida and Los Angeles-San Francisco fame, for the Oldsmobile in the Vanderbilt cup; and Louis Strang, a former mechanic of Walter Christie, in the seat of the Christie grand prix front drive candidate.

Improving the System—Another step has been taken in the plans of Indianapolis for an elaborate system of boulevards in the completion of the North Capitol avenue boulevard. It is about 3 miles long of the westrumite pavement kind, extending from Indiana avenue to Thirty-fourth street. Signs have been placed at all intersecting streets prohibiting other than pleasure vehicles from using it. North Capitol avenue is one of the popular thoroughfares for motor driving as it is free from street cars.

Another Gold Cupper—Georges Dupuy manager of the American gold cup tour, has received information from his Paris agent, John C. Hoveman, that the Mitchell Motor Car Co. has entered a car in the tour, to start from Havre. Mr. Sauerbach, manager of the Paris branch of the Mitchell Motor Car Co., has proffered the use of a Mitchell car to Mr. Dupuy for his personal use while in Paris. Georges Dupuy is to sail for Europe next week to arrange for the reception of the gold cup tourists. He will return by June 1 to attend to the shipment of the cars and the sailing of the invaders. Dupuy says he has secured nineteen bona fide entries, though the list does not close until May 15.

Cheap Transportation—Several students of the Hopkins university traveled 780 miles on gasoline and lubricating oil that cost \$22.90, or something less than 3 cents a mile. No money was spent for repairs to any part of the machine or the tires. The party consists of R. C. Chambers, I. Chandler Walker, Allen W. Chesney and Thomas Tredroy. They started, left Baltimore at 7 o'clock Thursday morning in a Stoddard-Dayton car for New York, where they arrived at 11 o'clock that night, after spending 2 hours in Philadelphia. Next day they went from New York to New Haven, and back to Newark, N. J., a distance of 185 miles. The next trip in the itinerary was from Newark to Atlantic City, 136 miles. From the seashore

they traveled to Philadelphia, 70 miles, and then to Baltimore, 145 miles. The trip from Baltimore to New York was 244 miles as made by the students.

Haynes Car in Museum—The first motor car built by Elwood Haynes has been placed in the Smithsonian institute at Washington as an example of the pioneer days of the industry.

Light Moon Racer Planned—It is reported that Louis P. Mooers will build a Moon racer for the Vanderbilt trials and that it will have a short wheel base and a 70-horsepower engine and weigh about 1,700 pounds.

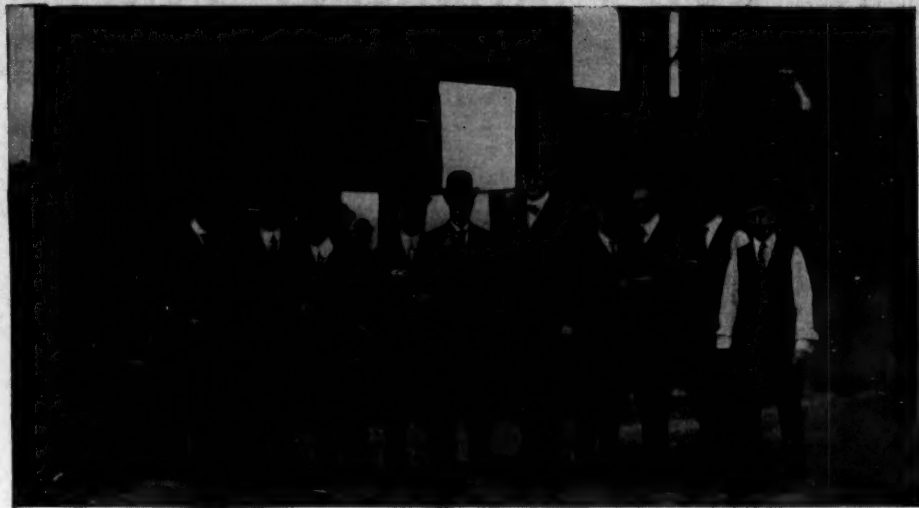
Buying Motor Bus—The New York Athletic Club has advertised for bids for the establishment of a motor car passenger service between its city club house facing Central park and its country home at Travers Island.

McDuffee Goes West—Joseph H. McDuffee, of the McDuffee Automobile Co., of Chicago, has gone to Arizona for his health. Symptoms of tuberculosis have developed but the doctors tell him several months of outdoor life will make him a new man. He will rough it in the wilds and he hopes to be back soon so big and hearty his friends will not know him.

More Rural Converts—Harrison township, Clay county, Ind., is among the enterprising communities enthusiastic over the good roads movement. Last week the farmers of the township voted a tax of \$77,000, which is to be used in the construction of an improved road 25 miles long. The county council also has been asked to allow \$25,000 for repairing and maintaining 21 miles of macadam roads built 10 years ago and leading out of Clay City. The assessed valuation of the township is only about \$2,000,000.

Long Island Club's Card—A busy season is anticipated by the Long Island Automobile Club, its runs and tour committee having planned the usual parade in May, and an endurance run. The official touring season is now on and the members of the club are contesting for three trophies. Willard P. Reid hangs up the Touring trophy, which goes to the member covering the greatest number of states and provinces. James Edward Bristol offers the Mileage cup for the greatest mileage from March 30 to October 30 and Samuel H. Burns the Endurance cup.

Driven Off Canal Path—The men who do the road testing of Thomas Flyers in and about Buffalo will be forced within the next few weeks to give up one of their favorite roadways. As soon as the temperature begins to drop along the northern part of New York canal men tie up their boats and go into winter quarters. As soon as they do the Thomas testers take to the tow path of the historic old Erie canal, where they may speed along to their heart's content. This they have been doing all winter and the path has proven a good speedway. Now that spring is at



GROUP OF STEEL MEN AT FORD VANADIUM POURING AT CANTON, O.

hand the boat owners are beginning to end their hibernation period, traffic along the way is being resumed and the testers have been forced to take to the roads again.

Sign Board Work—The Long Island Automobile Club has arranged to mark the tortuous route from Brooklyn bridge to Prospect park and the Coney Island boulevard by sign boards.

Frowned on by French—Upon being asked to sanction the American gold cup tour, the Automobile Club of France has passed a resolution which says: "Having regard to the nature of the fixture, which is a touring competition reserved to Americans, the committee is of the opinion that the Automobile Club of France can in no way whatever associate itself with any event which is not international."

Ford's Vanadium Pouring—That the introduction of vanadium in the making of special alloy steels for motor construction has created a mild sensation in metallurgical circles was evidenced by the presence of an even dozen of the most famous steel experts in this country, at Canton, O., last week when the second heat of vanadium chrome steel was poured by the Ford Motor Co. experts. This second heat is claimed as the world's record inasmuch as it beats the former Ford mark of 40 tons—the latter having been 45 tons. Assisted by Walter Griffith, chief metallurgist, United Steel Co.; J. Kent Smith and C. H. Wills, the Ford expert, superintended the work. The experts watched the entire course of making the steel from the ore through all the various stages, then through the process of rolling and finally forging into Ford runabout axles. It had been feared by some of the experts that difficulties would develop when it came to forging, similar to those which arise in forging nickel steel. This proved entirely without foundation. Not only could the steel be forged in one heat, whereas nickel requires fifteen to twenty, but the dies stood up as well under the work as in forging ordinary low carbon steel. The finished product showed remarkably fine

and uniform texture. All Ford vanadium chrome steel is made at the United Steel Co. plant at Canton, in a special furnace built by the Ford Motor Co.

Mexicans Progressive—Efforts to connect the City of Mexico with Pueblo, N. M., by means of a motor car road have been recognized by the city council of Pueblo, which has appropriated \$25,000 toward the construction of such a highway.

Ohioans Elect Officers—The following officers were elected for the ensuing year in the Circleville Automobile Club, of Circleville, O.: H. M. Crites, president; J. S. Ritt, vice president; H. S. Hulse, secretary; C. L. Boyer, treasurer. A club banquet will be given at an early date.

Wants Fenders—Assemblyman Brooks of Albany, N. Y., thinks he has solved the problem in relation to motors. He has introduced a bill in the state legislature at Albany, N. Y., compelling every car in the state to be equipped with fenders, similar to those in use on street cars. His scheme has not made a hit.

May Tour to Jamestown—Members of the Maryland Automobile Club are planning a run to the Jamestown exposition. With this idea in view Howard W. Gill has made several trips to Norfolk and Richmond to make preliminary arrangements. He reports that from Baltimore to Staunton, Va., an excellent run can be made, but that from that city on there are exceedingly rough roads.

Will Aid Epileptics—The contest committee of the Quaker City Motor Club has accepted an invitation from the women's aid committee of the Pennsylvania epileptic hospital and colony farm to co-operate with it in giving a motor carnival for the benefit of the hospital. The affair, which is scheduled for May 18 on the track of the Belmont Driving Club, will consist of races for various classes of cars, with a gymkhana and special novelty events. The contest committee has not as yet made a final selection of a hill for its climb, which it has finally decided to hold on Decoration Day.



BRIEF BUSINESS ANNOUNCEMENTS



Oakland, Cal.—The White company is erecting a new garage in this city.

Reading, Pa.—The Acme Motor Car Co. of Reading has been incorporated with a capital stock of \$5,000.

Columbus, O.—The Geneva and Lake Erie Automobile Line Co. has been incorporated with a capital stock of \$10,000.

Champaign, Ill.—The Richmond garage on North Neil street has undergone considerable alterations, and is open for business.

St. Louis, Mo.—The Phoenix Auto Supply Co., with A. L. Dyke, president, has increased its capital stock to \$12,000, fully paid in.

Scranton, Pa.—A garage is to be opened in the Simpson building on Seventh avenue. J. J. Simpson and Fred Hubbard are to act as managers.

New York—The Majestic Sight Seeing Co. has leased the premises at 553 West Fifty-ninth street and will use it as a garage and machine shop.

Findlay, O.—The Findlay Motor Car Co. has moved its garage from the corner of Harden and Main streets to a more spacious room on West Crawford street.

New York—George H. Tyrrell has leased from the plans the new garage now in course of erection on Webster avenue, near One Hundred and Ninety-fifth street, for a term of years.

Schenectady, N. Y.—Plans have been completed for the garage to be erected on Smith street for Close Brothers. The building is to be a two-story and basement structure, 32 by 180 feet.

New York—The American agency of the Delahaye and Pilain Co. has moved into new quarters at Broadway and Sixty-sixth street. The company, however, will still retain its garage at Park avenue and Sixty-third street.

Geneva, N. Y.—Arrangements have been made for the removal of the Motor and Manufacturing Works to this city. For the present the company will occupy the plant of the Chapman Tin Works, and later on build an addition to the plant.

Cincinnati, O.—The Tire Shop Co., which was recently incorporated, has leased the building at 220-222 East Seventh street. The company will vulcanize, repair and handle tires of all makes, including those manufactured in Europe.

New York—Norman Selby, better known as Kid McCoy, the pugilist, is about to go into the motor business. The Kid McCoy Motor Co. of New York has been incorporated at Albany with a capital stock of \$40,000, and will start in business at once at 60 West Forty-third street. The company will buy, sell and

rent. Besides McCoy, J. P. Gozman and H. H. Selby are interested in the concern.

Olympia, Wash.—The Seeing Seattle Auto Co. has made application for a trade mark.

Constantine, Mich.—Work has already been commenced on the new factory for the Hawley Automobile Co.

Philadelphia, Pa.—C. E. Rahn, architect, has prepared plans for four new garages to be built at Broad and Green streets.

Cleveland, O.—The Lake Avenue Automobile Co. is to erect a one-story brick garage on Lake avenue, near Elliott street.

Middletown, Conn.—The Eisenhuth Horseless Vehicle Co., which recently filed a petition in bankruptcy, has closed down its factory.

Bangor, Pa.—The Bangor Auto Garage and Motor Co., of which W. H. Pearce is the manager, has recently completed a garage and repair shop.

Columbus, O.—The American Castings Co., a recently organized concern, has closed a contract with the Midgley Mfg. Co. to supply 20,000 expansion rings for motor brakes. The contract practically will absorb the entire output of the company for the next 4 months. The officers are looking for a suitable location for the



Providence, R. I.—East Side Automobile Line Co., Pennsylvania.

Des Moines, Ia.—F. E. Goodwin, Rambler. **Scranton, Pa.**—Ford Automobile Co., Jackson.

Columbus, O.—Orlando-Kessler Automobile Co., Autocar.

Des Moines, Ia.—F. E. Goodwin, Mason. **Los Angeles, Cal.**—Harold Stone, Frayer-Miller.

Des Moines, Ia.—Goodwin Automobile Co., Mason.

Des Moines, Ia.—Goodwin Automobile Co., Rambler.

Peoria, Ill.—Raymond Lush, Reo.

St. Joseph, Mo.—Mitchell Automobile Co., Glide.

St. Joseph, Mo.—Mitchell Automobile Co., Jackson.

Bangor, Pa.—Bangor Automobile Garage and Motor Co., Rambler.

Buffalo, N. Y.—J. A. Cramer, Wayne.

Omaha, Neb.—Berger's Automobile Co., Wayne.

New York—Moon Motor Car Co., New York, Moon.

New York—Detroit Motor Car Co., American.

Newark, O.—White & Hess, Glide.

San Francisco, Cal.—D'Arcy, Scott & Co., Craig-Toledo.

Westbrook, Me.—C. B. Woodman Sons, Jewel.

Huntington, W. Va.—I. E. Hanley, Jewel.

London, Eng.—Shippey Brothers, Jewel.

Vancouver, B. C.—British Columbia Automobile Co., Jewel.

Fort Dodge, Ia.—C. H. Heath, Jewel.

Pingree, N. D.—Levi Jarvis, Jewel.

erection of a new plant, the present factory being too small.

Toledo, O.—The American Auto Tire Co. has been incorporated with a capital stock of \$5,000.

Montclair, N. J.—The Montclair Garage and Machine Co. has been incorporated with a capital stock of \$25,000.

New York—George S. Morrow, manager of the Michigan Storage Battery Co., is establishing a branch at 2230 Broadway.

Boston, Mass.—The Atlas Motor Car Co., agent for the Atlas, has opened a branch at 94 Massachusetts avenue.

Des Moines, Ia.—The Goodwin Automobile Co. has been organized here, and will locate its garage at 612-616 Mulberry street.

Buffalo, N. Y.—G. G. Meinell, the former manager of the Pennsylvania Rubber Co., is now connected with the Imperial Motor Co.

Raleigh, Cal.—W. H. Brewer is about to build a new garage and machine shop. The new building will be a three-story structure, 50 by 105 feet.

Chicago—The Chicago By-Auto Co. has been incorporated to do a general motor delivery and garage business. The incorporators are H. Gorton, E. L. Abbott and J. Vennema.

Minneapolis, Minn.—A permit has been granted to the Bardwell-Robinson Co. for the erection of a garage and office addition at its factory, Twenty-fourth avenue N and Second street.

New York—Albert H. Funke, of 83 Chambers street, has filed a petition in bankruptcy with assets of \$51,700 and liabilities of \$102,338. Mr. Funke was a dealer in guns and motor supplies.

Cincinnati, O.—Henry C. Peters and Frederick C. Miller are experimenting with a new motor car at their factory in Newport. Land for a proposed plant already has been purchased at Mitchell avenue and the B. & O. tracks.

Newark, O.—A new garage and an agency for the Gale was opened in this city last week by Dennis White and August Hess. The new garage is located at 61 South Third street. The only electric charging station in the city is located in this new garage.

Detroit, Mich.—A new garage is in course of construction at 199-201 Jefferson avenue for the J. B. McIntosh Co. In addition to being the state agent for the Buckeye Mfg. Co., the company also will deal in second hands. The new building is to be eight stories high, the first floor being used as a show room for the new machines, the office being on the second, while the upper floor will be given

over to the second hand machines and the repair shop.

Los Angeles, Cal.—The John T. Bill Co. has recently taken the agency for the Firestone tire.

Lafayette, Ind.—C. E. Shambaugh has broken ground for a large addition to his garage on Columbia street.

Newark, N. J.—The George Wood Mfg. Co., manufacturer of oilers, has been incorporated with a capital stock of \$10,000.

Tacoma, Wash.—The Yakima Garage and Automobile Co., of North Yakima, has been incorporated with a capital stock of \$5,000.

Providence, R. I.—The Stevens Duryea agents, C. D. Snow & Co., have removed to their new brick garage at Broad street and Potter avenue.

Bellefontaine, O.—The Bellefontaine Automobile Co. has increased its capital stock and will use the additional funds for the purpose of enlarging the plant.

Cleveland, O.—The Ohio Motor Car Co. is to have a new garage on East 107th street, near Euclid avenue, in addition to its present establishment on East Ninth street.

Grand Rapids, Mich.—The Rail and Equipment Co. has been incorporated with a capital stock of \$50,000, and will engage in the manufacture and sale of motor cars and supplies.

Pittsburg, Pa.—The E. J. Thompson Co., designers and builder of carriages and motor car bodies, is to open two establishments, one at 139-141 Seventh street, and the other at the company's shops, 5917-5919 Penn avenue, East End.

New York—The Crescent Parts Co. has been incorporated. The new concern controls the manufacture and output of the Crescent removable rim, formerly known as the Hamburg rim. For the present the company will have its offices with Wyck-off, Church & Partridge at 1743 Broadway.

Elyria, O.—The Garford Mfg. Co. is now located in its new factory at Clark and Winkles streets. It is the intention of the company to move the Cleveland plant to this city during the summer, and when the works are in full running order, they will furnish employment to between 1,000 and 1,500 people.

Toledo, O.—Karl and Lyman Spitzer, the owners of the property at Madison avenue and Thirteenth street, have had plans prepared for another building to be erected there, and are negotiating with several garage owners for a lease of the structure. Ground will be broken for the new garage in about 2 weeks.

Romeo, Mich.—Various plans are under consideration for the new addition to the plant of the Detroit Auto Vehicle Co. While no decision has as yet been arrived at it is probable a 60-foot addition will be made to the stone shop, in which will be located two annealing ovens, an engine room, etc. It is proposed to equip an up-

to-date foundry, and later on other buildings will be added.

Cincinnati, O.—The Auto Motor Car Co. has increased its capital stock from \$25,000 to \$50,000.

Bridgeport, Conn.—Work has been commenced on the new plant of the Van Aken Motor and Machine Works.

Trenton, N. J.—The Automobile Wheel and Rim Co., of Jersey City, has filed a certificate increasing its capital stock to \$500,000.

St. Joseph, Mo.—The Mitchell Automobile Co., which was recently incorporated, is to open a garage and repair shop at 310 South Fourth street.

Geneva, N. Y.—The Geneva Automobile Co. has completed its arrangements for the erection of a garage and repair shop, 132 by 40 feet, on Castle street.

Philadelphia, Pa.—The Western Automobile Co. is about to erect a new garage at 1928-1930 West Twentieth street. It will be two stories high, 36 by 113 feet.

Kalamazoo, Mich.—At the recent annual meeting, the directors of the Michigan Automobile Co. decided to increase the capital stock to \$200,000, and to erect a new addition to the plant.

New York—The Times Square Automobile Co., which deals in second-hand cars, is about to enlarge its quarters. The company has secured an addition to its present building on Forty-ninth street, just west of Broadway. The new structure forms an L with the present building, and



Boston, Mass.—Sight-Seeing Auto Co.; capital stock, \$10,000; to lease and hire motor cars; incorporators, C. H. Vaslett, Central Falls, R. I., and B. R. Thomas, 6 Clarendon street, Boston.

Worcester, Mass.—Pilot Garage and Supply Co.; capital stock, \$10,000; to deal in motors, etc.; incorporators, F. S. Taylor and F. W. White.

Trenton, N. J.—Leblanc Carbureter Co.; capital stock, \$2,000; to manufacture carbureters, motor cars and motor boats; incorporators, J. Caslaght and Jean Leblanc, of Guttenburg, and Henry Cryder, of New York, N. Y.

Rochester, Pa.—T. C. and W. L. Fry Co.; capital stock, \$10,000; to deal in motor specialties; incorporators, J. A. Miller, W. L. Fry and T. C. Fry.

New York—Widmer Machine Works; capital stock, \$50,000; to manufacture running gears for motor cars, etc.; incorporators, Theodore Hubert, of Brooklyn, and F. Nobel and S. E. Meyers, of New York.

New York—Newmastic Tire Co.; capital stock, \$150,000; to manufacture material for filling tires and tubes, incorporators, O. A. Parker and R. H. Hahn.

Newark, N. J.—Motor Import Co., capital stock \$100,000, to import and sell cars, carriages, wagons, etc. Incorporators, L. M. Lawson, Jr., and Peter Tiffany, of New York city, and J. B. Kirkpatrick, of Newark.

Springfield, Mass.—Sira Carbureter Mfg. Co., capital stock \$30,000, to manufacture carbureters and motor cars. Incorporators, F. W. Sickles, of Hartford, Conn., and S. W. Rosenfield, Springfield.

is 180 by 42 feet, and has a frontage on Broadway.

Toledo, O.—The American Auto Tire Co. has been incorporated with a capital stock of \$5,000.

Newark, N. J.—William Vey, recently with the Essex Auto Co., has returned to the Austin Auto Co. and will act as manager of that concern.

Rahway, N. Y.—A new commercial vehicle company has been organized here. F. P. Freeman and G. E. Kittle are the prime movers in the enterprise.

Grand Rapids, Mich.—Luce & Banks, agents for the Maxwell-Briscoe and the Stoddard-Dayton, have removed to their new quarters at 87 North Division street.

East Orange, N. J.—The White company is to erect a new garage here. Benjamin Adams, formerly connected with the company's agency at Lynn, Mass., is the local manager.

Cleveland, O.—H. F. Reed has been appointed garage manager for the Central Automobile Co. A. N. Bentley, of Chicago, is to be the sales manager of the electric carriage department.

Boston, Mass.—The Dodge Motor Vehicle Co., the local agent for the Pope cars, has leased quarters in the Copley Square garage, for a term of 5 years with the privilege of renewal for 5 more.

Los Angeles, Cal.—A new agency for the Frayer-Miller car will be opened here under the management of Harold Stone. In addition to the pleasure car, the company will handle the Frayer-Miller truck.

New York—The Cobe Automobile Co. of 1668 Broadway, has been reincorporated under the name of the Jackson Automobile Co. The company will continue to occupy its old quarters, and will still handle the Jackson.

New York—Lester C. Faure, formerly connected with the Maxwell-Briscoe company, and Herbert Adams, of the Lozier company, have formed a partnership, and will do a general motor and garage business. They have opened an establishment on the Boston post road, near Larchmont, to be known as the Larchmont garage.

Middletown, Conn.—Everett J. Esseltyn, of 35 Wall street, New York city, bought in the property of the Eisenhuth Horseless Vehicle Co. at public auction, for the sum of \$21,000, subject to the mortgage of \$125,000. The purchase was made for a client. It is probable the business of the company will be continued.

Fremont, O.—The French & Holderman plant has been transferred to the Imperial Steel Co. A new eight-pot crucible steel furnace will be built and a fifth wheel for motor cars and other vehicles will be manufactured. The plant in this city and the plant now in operation at Chagrin Falls will be merged and operated by the Imperial Steel Co., which shortly since filed articles of incorporation. The new company has a capital stock of \$100,000.

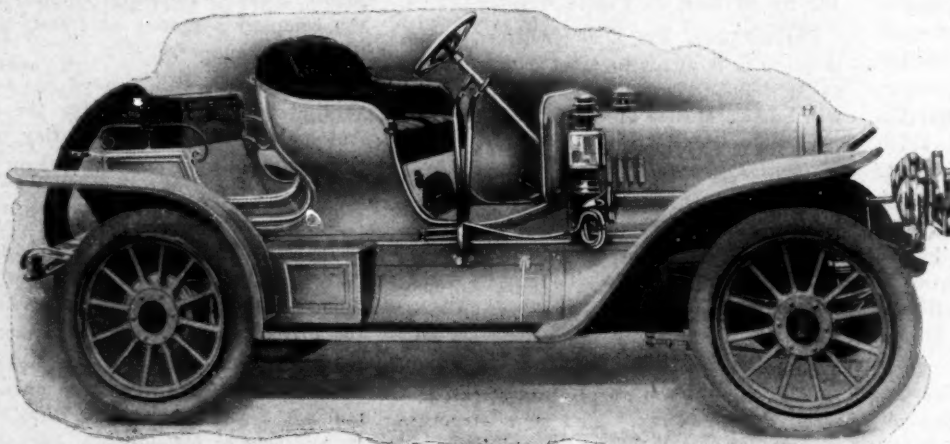
Give Mark Twain a Fountain Pen

and a pad of paper, and he produces a masterpiece.

Give a college student the same implements, and he may produce a composition, but never a masterpiece.

It's a difference of ability, gained through experience.

Mark Twain has been writing for 50 years and more; learning all the time; learning what to do and what not to do. The result is that Mark Twain knows how. When the college student has had Mark Twain's experience he, too, may know how, but not until then.



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MODEL M—40 H. P. Touring Car. Four 5 x 5 cylinders, offset to increase power. Four speeds ahead. Direct drive on third speed. Selective, sliding-gear transmission and 90 H. P. multiple disc clutch run on annular ball bearings. Working parts instantly get-at-able. \$3,500. Limousine, \$4,500.

TYPE X-I-V—30 H. P. Touring Car. Four 4½ x 5 cylinders, offset to increase power. Offset cam shaft. Surprisingly efficient carbureter. Low suspended motor. Horizontal drive shaft. \$2,500. Limousine, \$3,500.

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